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The study's primary purpose was to identify and evaluate the relative importance of factors responsible for the generally low labor force participation rates observable in the Ozark Low-Income Area, and variations in rates within the area itself. The study focused on 108 contiguous, rural-oriented, low-income counties in the states of Arkansas, Missouri, and Oklahoma, an area with income growth lagging behind that of the nation. Data for the analysis were taken from censuses and other published data. The authors felt the study's contributions to the general body of labor force participation analyses were to be found in its geographic setting and in its methodology focusing on the family as a decision-making unit regarding labor force participation. A crude model was developed in which the key factors affecting labor force participation were classified as need variables, opportunity variables, and family structure variables. The data were then analyzed using a stepwise multiple regression program which revealed that two variables, precent of personal income from nonwork sources and percent nonwhite account for about 50 percent of the variation in standardized male participation rates. Other findings and specific directions for further research are also discussed. (ET)

FINAL REPORT

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BY

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April, 1968

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RESEARCH
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OKLAHOMA STATE
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PREFACE

Relatively low labor force participation rates in an economically lagging region such as the Ozarks are indicative of important problems in human resource utilization. This report contains the results of the investigators' analyses of participation rates in the Ozarks. It is hoped that the findings contained herein will be of use to policy makers and researchers interested in learning more about factors determining the proportion of an area's population which is economically active.

The investigators wish to express appreciation to the U. S. Department of Labor for funding this project, and to the Oklahoma State University Research Foundation, Marvin T. Edmison, Director, for the supplemental services so important to work of this sort. Dr. Richard Leftwich, head of the investigators' department, and Dean Richard Poole of the College of Business, assisted greatly by providing an environment conducive to research efforts. Of particular importance were the physical facilities of the university's Manpower Research and Training Center.

Two sociologists, Dr. Michael Bohleber and Dr. Barry Kinsey, were associated with the project for short periods of time, and provided important insights into some of the noneconomic factors at work in the Ozarks region. The following students at Oklahoma State University assisted in the preparation and manipulation of a considerable volume of data: Dale Funderburk, Ronald Gilbert, Jean MacDonald and Mary Rink. The university's Computer Center provided fast and accurate service with respect to a large volume of data, only a portion of which was distilled for presentation in this report.

Special appreciation is due to Donna Martin and Norma Phillips, who contributed their secretarial skills and their abilities as research assistants.

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CHAPTER I

INTRODUCTION

Persons not in the labor force are, by definition, neither employed nor unemployed. Because they are not employed, they do not contribute to the nation's output of goods and services. Since they are not seeking employment, they appear to be less willing and able than the unemployed to engage in productive economic activity. Nonparticipation in the labor force is partially a function of physiological characteristics such as age, sex, and physical infirmity. However, variations in labor force participation rates also depend upon socioeconomic factors. Low median family income in an area tends to go hand in hand with low labor force participation rates, and may be a sign of underemployment on the part of many of those who are employed. It is clear that low participation rates are an integral part of the vicious circle which perpetuates poverty in a low-income area. Such an area is found in the Ozarks of Missouri, Arkansas, and Oklahoma.

The primary purpose of this report is to identify and evaluate the relative importance of factors responsible for (1) the generally low labor force participation rates observable in the Ozark Low-Income Area, and (2) variations in rates within the area itself. It is hoped that the results of this effort will provide information relevant to the formulation of manpower policy and analysis for this and similar regions.

An empirical and methodological setting for the analysis of labor force participation rates in the Ozark Low-Income Area is presented in the second and third chapters of this report. Chapter II provides an overview of the nature and utilization of the region's human and material resources. Chapter III focuses on the area's nonparticipation problem and examines how it may be related to methodological approaches toward the study of labor force participation rates exhibited in other analytic approaches. The fourth chapter contains the primary analysis and findings. A crude model of family decision-making concerning labor force participation is developed, available empirical data are fitted as inputs into the model, and correlation and stepwise multiple regression statistical analyses are applied to identify key factors appearing to have a bearing on intercounty variations in participation rates within the region. In the following two chapters, selected developments affecting manpower in the region since 1960 are examined, and an attempt is made to review the research and policy implications which can be derived from the study.

To the extent that this study adds substantively to the general body of labor force participation analyses, its contributions are to be found in its geographic setting and its methodology focusing on the family as a decision-making unit. Both because of data availability and quantitative importance, most empirical work in this field has dealt with metropolitan areas or with broad regional aggregates. Little work has been done on intercounty patterns in rural poverty areas. The family decision-making model is a tentative step toward the development of more realistic theoretical analysis of labor supply than is found in traditional microeconomic theory. Ideally, the testing of such models should be based on data derived from applying appropriate interview schedules to family units. Such an approach was not possible in this study, and the investigators relied on published county-level data. Although these data are not cross-classified in a manner permitting identification of detailed family unit characteristics, the results of regression analyses tended to support certain of the hypotheses explicit in the model. These results, in turn, support the need for further field research and suggest directions which such efforts might take.

CHAPTER II

THE OZARK LOW-INCOME AREA

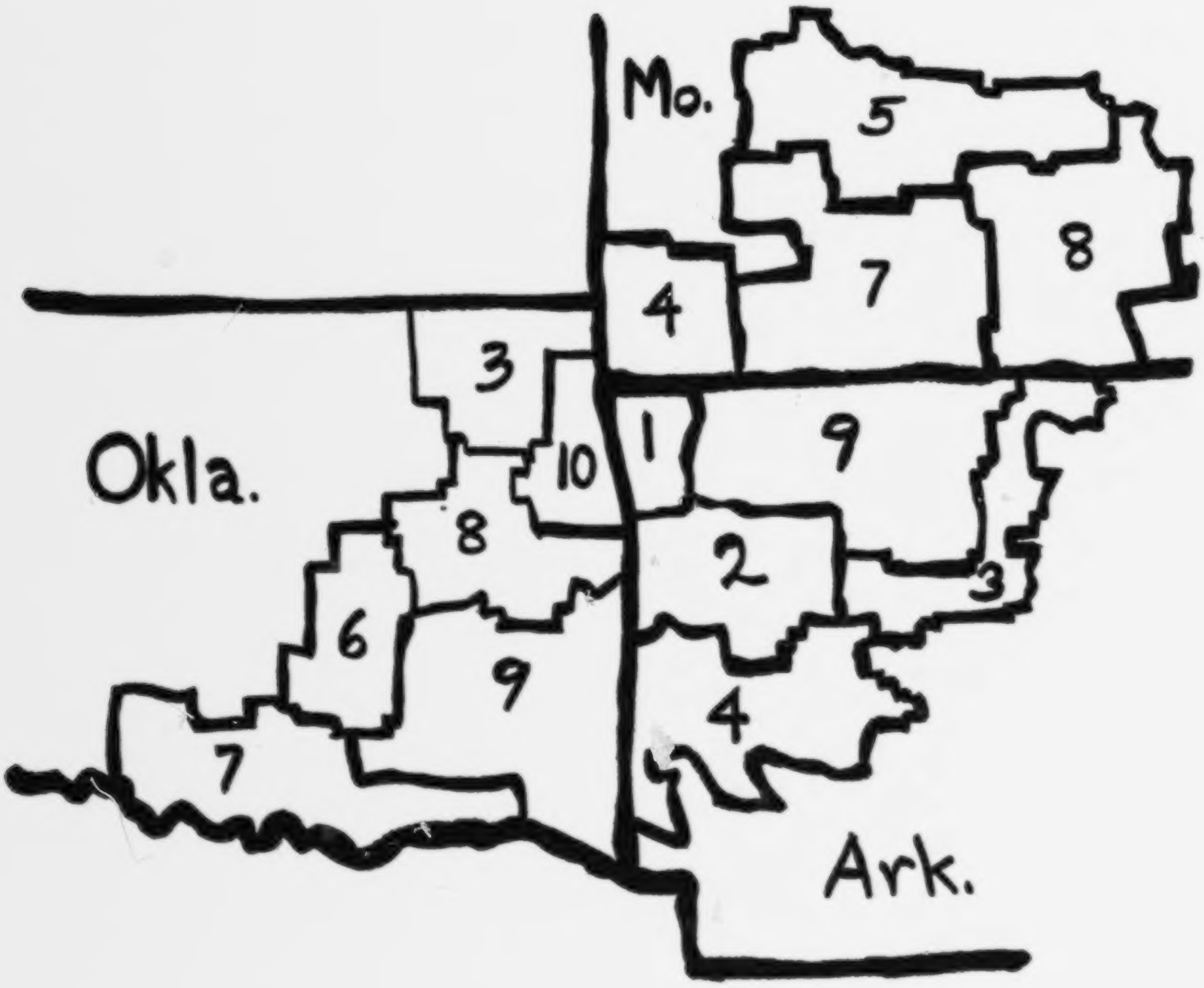
The purpose of this chapter is to provide background information which will be of use in the analysis of labor force participation rates in the following chapters. Emphasis is placed on geographic features, quantitative and qualitative aspects of the population, and income and employment patterns.

Delineation of the Region

The region on which this report focuses is composed of 108 counties in the states of Arkansas, Missouri, and Oklahoma. It is referred to as the Ozark Low-Income Area, although it is somewhat broader in scope than the Ozark plateau geologic area. The area is characterized by many common social and economic problems. Because it is not entirely homogeneous, it would certainly be possible to challenge any particular method used for determining whether or not a particular county is to be included. The basic criterion which the investigators used for this purpose is found in the U. S. Bureau of Census' 1960 state economic area definitions. The counties are those found in state economic areas 1, 2, 3, 4, and 9 in Arkansas, areas 4, 5, 7, and 8 in Missouri, and areas 3, 6, 7, 8, 9, and 10 in Oklahoma (Figure 2-1). A detailed listing of these counties and their SEA's is included in Appendix A. Since homogeneity is the key factor used by Census experts in delineating these state economic areas, it

Figure 2-1

OZARK LOW-INCOME AREA[a]


Mo.
5
7
8
4
3
Okla.
10
1
9
8
2
3
6
9
4
7
Ark.

---

[a] 108 counties consisting of census State Economic Areas 1, 2, 3, 4, and 9 in Arkansas; 4, 5, 7, and 8 in Missouri; and 3, 6, 7, 8, 9, and 10 in Oklahoma.

appeared that this was not an unreasonable procedure.

It is also fairly common to find the area used in this study referred to as the Ozark region. The counties utilized are not significantly different from those originally officially delineated by the U. S. Department of Commerce in connection with the activities of the Ozark's Regional Commission, or with the area referred to as the "Ozark region" in a 1966 study by the U. S. Department of Agriculture.[1]

Geography and Resource Base

The Ozark Low-Income Area covers slightly less than 80,000 square miles--an area about the same size as the combined states of Kentucky and Tennessee. Because it is a relatively large area, its geography and resource base exhibit some considerable variation. No attempt is made in this chapter to enter into a detailed description of the area's individual subregions. The reader who is interested in such detail can turn to more specialized sources for such information.[2] Rather, the attempt is made to identify key features which appear to have a direct bearing on the quality and utilization of human resources.

This area is essentially an extension of the hill country which begins far to the east in the Appalachians. The hills themselves, together with the fact that the Ozark Low-Income Region is not directly located on major north-south or east-west transportation routes, has meant that throughout much of the nation's historical development the area's population has been relatively isolated. This isolation has probably inhibited processes of economic and social adjustment which have occurred in areas which are less geographically remote. Examples of the results of this isolation are found in the clear Anglo-Saxon traits found particularly in the Missouri Ozarks, and in certain characteristics of the Indian population of the Oklahoma portion. Even today, the absence of adequate roads and highways can act to reduce economic and cultural interaction. In the area's growth centers there is evidence that labor supply would be somewhat larger if neighboring rural residents were able to commute easily to town by all-weather highways.

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[1] Max F. Jordan and Lloyd D. Bender, An Economic Survey of the Ozark Region, U. S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 97, 1966.

[2] See, for example, Donald J. Bogue and Calvin L. Beale, Economic Areas of the United States (Glencoe, Ill.: The Free Press, 1961).

A second key fact about the area's resource base relates to agriculture. Historically, farming has been the prime source of the area's income and employment. Yet, the quality of agricultural land is generally such that relatively small-scale farming has not proved to be a viable source of adequate family income. As new technology has forced various adjustments on the nation's agricultural sector, this region, with its inferior resource base, has been particularly hard hit. The number of farms and the total land in farms has been declining over the last two decades, and there has been a rapid decline in rural population. Although there are exceptions, particularly in the rich soils of bottom lands, the area is characterized by agriculture which specializes more heavily in livestock than crop production. Of particular importance are the beef cattle and broiler industries. Thus, the quality of the area's resource base has not served to complement well its primary industry, and most experts agree that economically viable farms will continue to become larger and larger. There will also be a continued expansion in part-time agricultural activities.

Although the region contains some very important mineral deposits, the mining industry has not provided the same monolithic basis for employment as is the case in Kentucky and West Virginia. Bauxite mining and alumina production are significant in a portion of the area in Arkansas. The lead and zinc industry was once a key source of employment in southwestern Missouri and northeastern Oklahoma. However, this has declined rapidly in the last several decades. Petroleum and coal production have been important in Oklahoma and Arkansas, but again an employment pattern typical of a wasting resource may be observed. It is interesting to note, for example, that the greatest percentage decline in population between 1940 and 1950 for any state economic area in the continental United States occurred in Oklahoma SEA 6.[3] This is attributable primarily to declining employment opportunities in the petroleum industry.

The long growing season and abundant rainfall found particularly in the Ouachita Mountains in the southern part of the Ozark Low-Income Area have provided the basis for considerable lumber production. The relative abundance of native wood has also led to the development of a fairly large number of furniture manufacturing establishments throughout the area.

Developments during the post-World War II period make it clear that one of the most important natural resources in the area is found in its recreation potential. Indeed, some observers have suggested that the growth of tourism and related industries will provide a primary source of employment expansion and improved human resource utilization in the area.[4] It is clear that certain key locations such as Hot Springs,

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[3] Ibid., p. 949.

[4] Jordan, op. cit.

Arkansas, the Lake of the Ozarks in Missouri, and Lakes Eufaula and Texhoma in Oklahoma have become focal points for the growth of employment in tourist-related industries.

The Region's Population

The 1960 Census of Population indicated that approximately 1.9 million persons lived in the Ozark Low-Income Area. As Table 2-1 indicates, this is a slightly smaller population than resided in the area in 1910. Appendix B presents county population trends and shows that 76 of the area's 108 counties had fewer residents in 1960 than in 1910, and 92 lost population during the fifties. This pattern presents a stark contrast to the Nation's total population which doubled from 1910 to 1960. From 1940 to 1960 the area's population declined by 17 percent while that of the United States increased by 35 percent. There is some indication, mostly of a casual nature, which suggests that this population decline may have been reversed slightly during the 1960's. It is doubtful that such a reversal will prove to have been of a significant magnitude when hard data are again available as a result of the 1970 census.

The area's declining population is caused by relatively high rates of net outmigration associated primarily with contracting employment opportunities in agriculture. There are several correlates of this high rate of net outmigration which have an important bearing on the nature of the area's human resource base. Those leaving the area tend to be younger than those migrating in.[5] Not only are the counties in the area

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[5] Gladys K. Bowles and James D. Tarver, Net Migration of the Population, 1950-60 by Age, Sex and Color, U. S. Department of Agriculture, Economic Research Service, 1966, Vol. I, Parts 2 and 5.

Table 2-1

POPULATION OF THE OZARK LOW-INCOME AREA, 1910-1960
(thousands of persons)

Year	Total	Arkansas Portion	Missouri Portion	Oklahoma Portion
1910	2,032	687	644	701
1920	2,230	708	601	921
1930	2,192	681	576	935
1940	2,290	709	612	969
1950	2,033	672	570	791
1960	1,890	611	580	699

Source: U. S., Bureau of the Census, U. S. Census of Population, appropriate years.

losing, decade after decade, a considerable portion of persons in the early years of their work lives, but it is also probable that for any given age group the outmigrants are more economically capable and vigorous than those who migrate in or choose to stay put.[6] County median age has tended to rise as a result of this pattern.

The average level of educational attainment of the population of the area is considerably lower than is found in more developed areas of the nation. For the 15 state economic areas, median years of school completed of those 25 years old and over ranged from 8.4 to 9.9 in 1960 (Table 2-2). In that same year 9.7 percent of those residing in the area 25 years old and over had received less than five years of education and thus could be classed as functionally illiterate. In a six-county area in southeastern Oklahoma (SEA 9) this portion was 15.5 percent. The failure of the area's educational level to rise toward the national average is due not only to the failure of its young people to stay in school as long, but is also a function of the increasing average age of the area. The vicious cycle by which poverty is passed from one generation to another via inadequate educational facilities is enhanced as median age increases and potential support for utilizing meager local financial resources for school improvement is reduced.

Although the national trend toward urbanization is certainly evident in this area, a majority of its residents still live in rural areas.[7]

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[6] Varden Fuller, "Farm Manpower Policy," in C. E. Bishop (ed.), Farm Labor in the United States (New York: Columbia University Press, 1967), p. 97.

[7] For details on the area's rural orientation and an examination of rural manpower characteristics as they were in the mid-1950's, see William H. Metzler and J. L. Charlton, Employment and Underemployment of Rural People in the Ozark Area, University of Arkansas, Agricultural Experiment Station, Bulletin 604, November, 1958; and James D. Tarver, A Study of Rural Manpower: Southeastern Oklahoma, Oklahoma A & M College, Division of Agriculture, Experiment Station, Technical Bulletin No. T-56, September, 1955.

Table 2-2

MEDIAN FAMILY INCOME, MEDIAN YEARS OF SCHOOL COMPLETED, AND PERCENT OF POPULATION THAT IS NONWHITE, OZARK LOW-INCOME SEA's, 1959-60

	Median Family Income 1959	Median Years of School Completed By Persons 25 and Over, 1960	Percent Nonwhite 1960
ARKANSAS			
SEA 1	$ 3,452	9.7	0.6
SEA 2	3,322	9.0	4.3
SEA 3	2,708	8.8	7.1
SEA 4	3,357	8.8	7.9
SEA 9	2,239	8.6	0.2
MISSOURI			
SEA 4	3,900	9.3	0.8
SEA 5	3,495	8.8	2.2
SEA 7	2,703	8.7	0.2
SEA 8	3,249	8.5	0.2
OKLAHOMA			
SEA 3	4,633	9.9	5.9
SEA 6	3,332	8.7	14.9
SEA 7	3,645	9.3	7.8
SEA 8	3,417	8.8	19.3
SEA 9	2,658	8.4	12.7
SEA 10	2,322	8.4	19.3

Source: U. S., Bureau of the Census, U. S. Census of Population: 1960, Selected Area Reports, State Economic Areas, Final Report PC(3)-1A, 1963.

Fort Smith, Arkansas, with 56,000 residents in 1960, is by far the largest city included. Little Rock, Springfield, and Tulsa are located in counties adjacent to the region and have tended to increase the urban orientation of nearby residents. Nevertheless, only 13.6 percent of the area's 1960 population lived in cities with more than 20,000 residents (Fort Smith, Fayetteville-Springdale, and Hot Springs in Arkansas; Joplin, Missouri; and Muskogee, Ardmore, Bartlesville, and Duncan in Oklahoma). The mean population size of this group of cities was about 30,000. These cities themselves certainly do not take on the characteristics of large metropolitan areas, and orient a considerable portion of their economic activity toward the surrounding rural areas. It is clear, however, that the area's urban population is growing, and that if future increases in the area's population are observed, they are likely to be a result of the growth of urban centers.

Poverty presents a much greater relative problem with respect to Spanish-Americans, Indians, and Negroes than is the case with the balance of the nation's population. Yet, poverty is certainly not limited to minority cultures. That this is so is well illustrated in the Ozark Low-Income Area. In its northern part, which includes SEA's 1 and 9 of Arkansas and the entire portion of the area in Missouri, nonwhites account for less than 1 percent of the total population (Table 2-2). Only in Oklahoma areas 6, 8, 9, and 10 does the percent nonwhite reach a level where racial composition might be an independent factor responsible for widespread poverty. It should be added that an important portion of the nonwhite population in the Oklahoma Ozarks consists of American Indians. Nevertheless, throughout the area median family income for nonwhites is considerably below that received by whites. Indeed, part of the Indian population of Oklahoma represents a special problem culture for which specialized policies may be needed to improve human resource utilization.

There has been some tendency for the percent of the population which is nonwhite in this area to decline over the years. Rates of net out-migration for nonwhites during the decade of the 1950's are generally higher than for whites.[8] This is probably a result of the greater concentration of nonwhite employment in the agricultural sector where opportunities are declining most rapidly.

Income and Employment Patterns

Median family income figures for 1959 can be used to make explicit the fact that this area is indeed a "low-income" region. Of the area's 108 counties, 68 reported median family income of $3,000 or less in 1959.[9] The number of counties in the Ozark Low-Income Area falling into

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[8] In the Bowles-Tarver 1950-60 net migration estimates, data are presented for whites and nonwhites for nine of the fifteen Ozark SEA's. (The other six had less than 5,000 nonwhites in 1950.) Net migration rates for the SEA's showing white-nonwhite figures are as follows:

State and SEA		White	Nonwhite
Ark.	2	-18.9	-20.3
Ark.	3	-22.7	-26.7
Ark.	4	-13.5	-17.5
Okla.	3	- 8.3	- 7.1
Okla.	6	-30.8	-29.8
Okla.	7	-15.3	-23.6
Okla.	8	-21.0	-23.0
Okla.	9	-26.0	-28.6
Okla.	10	-18.4	-19.4

Gladys K. Bowles and James D. Tarver, op. cit., Vol. I, Parts 2 and 5.

[9] No attempt is made to plug the county figures into a more sophisticated framework for identifying poverty. See, for example, Harold W. Watts, "The Iso-Prop Index: An Approach to the Determination of Differential Poverty Income Thresholds," The Journal of Human Resources, II (Winter, 1967), pp. 1-18.

selected 1959 median family income classes is as follows:

$2,000 and under	9
$2,001 - $2,500	27
$2,501 - $3,000	32
$3,001 - $3,500	18
$3,501 - $4,000	11
Above $4,000	11

A picture of the intraregional pattern of median family income can be obtained for the state economic areas from Table 2-2.

Within the urban places of the area, i.e., places of 2,500 population or over, 1959 median family income tended to be considerably higher than was the case for rural farm and rural nonfarm residents. Though there are exceptions, it is also safe to generalize that median family income for rural nonfarm residents tends to be lower than for rural farm residents. Thus, although the area is certainly a "hard core" one in terms of poverty, the very hardest core poverty can be found among those living in rural nonfarm settings.

Not only is median family income in the area so low as to be indicative of very widespread poverty, there are signs that this income condition has been rather intractable. In 1949, the region's median family income was about 53 percent of the national figure; a decade later this proportion had risen to 58 percent. Yet from 1949 to 1959 the absolute gap between regional and national family income had risen from $1,450 to almost $2,400--an increase of roughly two-thirds. Thus the absolute degree to which this area's economic welfare lagged behind the nation increased significantly during the 1950's in spite of the fact that its median family income rose at a somewhat more rapid rate.

Some of the factors associated in a causal fashion with these poverty conditions have been discussed above. Tables 2-3, 2-4, and 2-5 help to round out this picture by presenting employment patterns in 1950 and 1960

Table 2-3

EMPLOYMENT PATTERN BY INDUSTRY GROUP, OZARK LOW-INCOME STATE ECONOMIC AREAS, 1950 and 1960

	ARKANSAS									
	SEA 1		SEA 2		SEA 3		SEA 4		SEA 9	
	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960
Number employed:										
Male	23,238	22,151	42,314	35,589	32,878	24,649	38,180	31,753	35,008	23,757
Female	8,190	10,589	12,050	15,785	7,511	10,331	10,589	13,443	6,637	7,885
Total	31,428	32,740	54,364	51,374	40,389	34,980	48,769	45,196	41,645	31,642
Percent employment by industry group:										
Agriculture, forestry and fisheries	37.9	17.0	26.1	10.3	44.8	20.5	20.3	7.4	53.5	29.2
Mining	0.1	0.1	3.1	1.4	0.7	0.5	2.9	2.3	0.3	0.5
Construction	6.3	7.1	5.6	7.1	5.9	8.3	7.3	7.1	8.3	8.3
Manufacturing	10.3	19.9	16.5	24.0	11.6	20.2	20.9	27.0	8.4	18.4
Transportation, communications and other public utilities	4.5	5.7	6.0	6.3	4.0	5.2	5.3	5.6	3.5	4.6
Wholesale and retail trade	17.2	19.3	19.5	20.6	13.7	17.7	17.4	18.8	10.6	16.4
Finance, insurance and real estate	1.8	2.6	1.9	2.8	1.1	2.1	1.7	2.8	0.9	1.8
Services	18.0	23.2	16.9	20.9	13.4	20.4	20.5	23.3	9.8	14.9
Public administration	2.2	2.7	2.9	3.7	2.1	2.9	2.3	2.8	2.3	3.3
Industry not reported	1.5	2.3	1.6	2.9	3.0	2.3	1.4	2.9	2.2	2.8
Total[a]	99.8	99.9	100.1	100.0	100.3	100.1	100.0	100.0	99.8	100.2

[a] Percentages may not add to 100.0 because of rounding.

Table 2-3 (continued)

EMPLOYMENT PATTERN BY INDUSTRY GROUP, OZARK LOW-INCOME STATE ECONOMIC AREAS, 1950 AND 1960

	MISSOURI							
	SEA 4		SEA 5		SEA 7		SEA 8	
	1950	1960	1950	1960	1950	1960	1950	1960
Number employed:								
Male	44,189	38,009	34,611	31,659	42,003	33,038	30,488	22,974
Female	14,815	17,418	9,192	14,051	10,429	13,771	7,782	9,002
Total	59,004	55,427	43,803	45,710	52,432	46,809	38,270	31,976
Percent employment by industry group:								
Agriculture, forestry and fisheries	26.8	12.8	40.0	17.9	54.2	29.4	33.8	15.3
Mining	1.4	0.4	1.4	1.4	0.1	0.3	9.3	9.0
Construction	5.7	6.0	5.8	8.0	4.5	7.1	4.9	6.4
Manufacturing	15.5	24.1	12.7	17.7	8.5	17.0	15.6	20.7
Transportation, communications and other public utilities	7.5	6.6	5.4	5.9	4.0	4.8	5.9	6.1
Wholesale and retail trade	21.3	20.9	13.8	19.7	11.8	17.6	12.9	17.6
Finance, insurance and real estate	2.0	3.1	1.2	1.9	1.0	2.0	1.0	1.8
Services	16.1	18.8	14.0	17.8	10.2	14.4	11.8	17.6
Public administration	2.3	3.0	3.6	6.7	2.0	3.4	2.4	3.2
Industry not reported	1.4	4.3	2.2	3.0	3.5	4.0	2.3	2.3
Total[a]	100.0	100.0	100.1	100.0	99.8	100.0	99.9	100.0

[a] Percentages may not add to 100.0 because of rounding.

Table 2-3 (continued)

EMPLOYMENT PATTERN BY INDUSTRY GROUP
OZARK LOW-INCOME STATE ECONOMIC AREAS, 1950 AND 1960

	OKLAHOMA											
	SEA 3		SEA 6		SEA 7		SEA 8		SEA 9		SEA 10	
	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960
Number employed:												
Male	34,020	32,220	27,934	18,919	2,572	36,011	40,267	31,134	31,641	21,645	10,645	7,648
Female	10,684	12,929	7,475	7,850	1,056	14,242	12,424	13,426	7,809	8,935	2,015	3,118
Total	44,704	45,149	35,409	26,769	3,628	50,253	52,691	44,560	39,450	30,580	12,660	10,766
Percent employment by industry group:												
Agriculture, forestry and fisheries	22.0	9.3	26.1	11.6	36.9	12.6	27.1	10.9	34.1	15.0	52.1	19.6
Mining	13.4	11.0	12.0	9.4	1.0	8.8	2.5	2.2	2.7	2.4	0.2	0.1
Construction	8.4	8.1	6.5	8.0	3.6	7.6	7.0	7.2	5.8	7.8	7.3	11.7
Manufacturing	9.7	16.9	5.9	10.4	3.3	11.8	12.0	17.4	11.0	16.0	5.0	9.1
Transportation, communications and other public utilities	5.7	6.4	6.0	6.3	4.5	6.1	6.4	6.5	5.7	5.5	3.2	4.7
Wholesale and retail trade	16.4	18.5	18.1	21.5	10.7	21.2	18.0	20.4	15.4	20.2	11.2	18.7
Finance, insurance and real estate	2.0	2.8	1.9	2.6	1.3	2.7	2.1	2.9	1.3	1.9	0.9	1.6
Services	16.8	20.3	18.1	21.8	34.1	22.1	19.0	23.3	16.0	21.9	14.9	24.0
Public administration	3.2	3.5	3.3	5.1	1.4	4.2	4.1	5.0	6.5	7.0	2.9	4.2
Industry not reported	2.4	3.3	2.2	3.2	3.2	2.7	1.8	4.2	1.5	2.4	2.5	6.4
Total[a]	100.0	100.1	100.1	99.9	100.0	99.8	100.0	100.0	100.0	100.1	100.2	100.1

[a] Percentages may not add to 100.0 because of rounding.

Source: U. S. Bureau of the Census, U. S. Census of Population: 1950, Vol. II, Characteristics of the Population, Part 36, Oklahoma, 1952.

Table 2-3

Source: (Continued)
Donald J. Bogue and Calvin L. Beale, Economic Areas of the United States (Glencoe, Ill.: The Free Press, 1961).

U. S., Bureau of the Census: U. S. Census of Population: 1960, Selected Area Reports: State Economic Areas, Final Report PC(3)-1A, 1963.

Table 2-4

NUMBER OF EMPLOYED PERSONS, BY OCCUPATION GROUP AND BY SEX, OZARK LOW-INCOME AREA, 1950 AND 1960

	Total			
	Male		Female	
Occupation Group	1950	1960	1950	1960
Total employed persons	509,027	411,156	138,414	172,775
Professional, technical and kindred workers	26,246	30,030	18,990	21,975
Farmers and farm managers	151,031	58,403	3,380	4,044
Managers, officials and proprietors, except farm	44,937	44,360	8,544	9,420
Clerical and kindred workers	16,163	17,711	24,372	35,306
Sales workers	24,107	23,846	13,464	15,783
Craftsmen, foremen and kindred workers	62,936	70,724	1,300	1,831
Operatives and kindred workers	73,022	81,128	17,298	27,130
Private household workers	507	346	9,925	12,400
Service workers, except private household	16,537	17,879	20,919	31,174
Farm laborers and foremen	46,156	17,471	14,397	3,686
Laborers, except farm and mine	40,595	34,907	1,133	1,032
Occupation not reported	6,790	14,351	4,692	8,994

Source: U. S., Bureau of the Census, *U. S. Census of Population: 1950*, Vol. II, *Characteristics of the Population*, Part 36, Oklahoma, 1952.

Donald J. Bogue and Calvin L. Beale, *Economic Areas of the United States* (Glencoe, Ill.: The Free Press, 1961).

U. S., Bureau of the Census, *U. S. Census of Population: 1960*, *Selected Area Reports*, *State Economic Areas*, Final Report PC(3)-1A, 1963.

Table 2-5

PERCENTAGE DISTRIBUTION OF EMPLOYED PERSONS BY OCCUPATION GROUP AND BY SEX, OZARK LOW-INCOME AREA, 1950 AND 1960

	Total			
	Male		Female	
Occupation Group	1950	1960	1950	1960
Professional, technical and kindred workers	5.2	7.3	13.7	12.7
Farmers and Farm managers	29.7	14.2	2.4	2.3
Managers, officials and proprietors, except farm	8.8	10.8	6.2	5.5
Clerical and kindred workers	3.2	4.3	17.6	20.4
Sales workers	4.7	5.8	9.7	9.1
Craftsmen, foremen and kindred workers	12.4	17.2	0.9	1.1
Operatives and kindred workers	14.3	19.7	12.5	15.7
Private household workers	0.1	0.1	7.2	7.2
Service workers, except private household	3.2	4.3	15.1	18.0
Farm laborers and foremen	9.1	4.2	10.4	2.1
Laborers, except farm and mine	8.0	8.5	0.8	0.6
Occupation not reported	1.3	3.5	3.4	5.2
Total[a]	100.0	99.9	99.9	99.9

[a] Figures may not add to 100.0 because of rounding.

Source: U. S., Bureau of the Census, *U. S. Census of Population: 1950*, Vol. II, *Characteristics of the Population*, Part 36, Oklahoma, 1952.

Donald J. Bogue and Calvin L. Beale, *Economic Areas of the United States* (Glencoe, Ill.: The Free Press, 1961).

U. S., Bureau of the Census, *U. S. Census of Population: 1960*, *Selected Area Reports*, *State Economic Areas*, Final Report PC(3)-1A, 1963.

broken down by industry class and occupation type. These tables make clear the tremendous reorganization in human resource utilization which has been occurring within the Ozark Low-Income Area. Table 2-3, which presents the percentage share of employment by industry class for the region's 15 SEA's, indicates the general uniformity with which the agricultural sector has provided fewer and fewer employment opportunities. The historical difficulties faced by the region's agricultural sector solely because of the nature of the resource base have been compounded by new forms of agricultural technology and farm management arrangements. Thus a broad overview with respect to the region's inability to participate in economic growth to the same extent as other areas of the country and with respect to its striking pattern of net outmigration, must be premised primarily on what has happened in the agricultural sector and what has failed to happen in other sectors. _Declining employment opportunities in agriculture have not been offset by a sufficient expansion in the availability of non-agricultural jobs_.

Like any generalization, the one at the close of the preceding paragraph is subject to exceptions. There are, of course, growth-center counties which do not fit the pattern. A further exception is extremely important and provides an interesting set of insights into the current nature of the area's work force. There is a remarkable difference in employment trends between 1950 and 1960 for males as opposed to females. The increasing utilization of women in non-household types of economic activity in the United States is a familiar story and provides a partial background for what occurred during the '50's in the Ozark Low-Income Area. Nationally, employment expanded by about 8.4 million workers. However, employment of males expanded by only 2.9 million while the employment of females rose by 5.5 million. This national pattern is essentially reproduced in the non-agricultural (non-farming) occupations of the Ozark Low-Income Area. Between 1950 and 1960 female non-agricultural employment rose by about 44,000 workers while male non-agricultural employment rose by 23,000 (Table 2-4). However, when the farming sector is included, the pattern of change looks vastly different than that of the nation as a whole. For males the number of jobs in the occupations classed as "farmers and farm manager," and "farm laborers and foremen" declined from 197,000 to 76,000--an absolute decline of 121,000 jobs. This declining opportunity in farming for males was offset by an expansion of only 23,000 jobs in non-agricultural occupations, and the net result was a total decline for male employment of almost 100,000 workers. The stresses associated with this adjustment process are likely to continue even though the absolute decline in farm employment cannot match that of the 1950's.[10]

Employment opportunities for females also declined in the agricultural occupations during the 1950's. However, this decline was only about 10,000 workers and was much more than offset by the increase in female employment in other occupations, so that by the end of the decade total female employment had risen by 34,000 workers. Almost three-quarters of the increase in non-agricultural female employment during the decade occurred in the clerical, sales, operatives, and service occupations (about 10,000 per group).

Thus, it is clear that labor market demand conditions in the area were vastly more favorable for females than was the case for males. This was supplemented from the supply side by newly developing attitudes toward the working woman, and by the region's general trend toward urbanization. Although the antipoverty programs of the 1960's may prevent a repetition of this pattern for males, it is almost too much to expect that the absorptive capacity of non-agricultural labor markets in a generally low-income area such as this could have been sufficient to provide a complete offset to the tremendous decline in employment opportunities for males in agriculture.

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[10] Gladys K. Bowles, Calvin L. Beale, and Benjamin S. Bradshaw, Potential Supply and Replacement of Rural Males of Labor Force Age, 1960-70, U. S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 378, 1966.

The tremendous changes in the industrial and occupational employment mix of the Ozark Low-Income Area have had a great deal to do with the patterns of labor force participation rates analyzed in the following chapters. For example, the fact that participation rates for males in this area are generally lower than the national average is related to the rapidity with which the agricultural sector has sloughed off surplus male labor.

Summary

The Ozark Low-Income Area exhibits characteristics not unlike other rural-oriented low-income areas of the United States.[11] The heart of the region's poverty problem is found in its resource base and its initial heavy reliance on farming as an income source. This unfortunate condition has interacted with population quality and the absence of vigorous growth in labor demand in non-farming occupations. The result has been net outmigration, and a general lagging of income growth behind that of the nation.

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[11] For a survey of the national characteristics of the rural poor see the Manpower Report of the President, 1967 (Washington: U. S. Government Printing Office, 1967), pp. 101-21.

CHAPTER III

THE DIMENSIONS AND PRELIMINARY IMPLICATIONS OF THE AREA'S NONPARTICIPATION PROBLEM

In the introductory chapter it was pointed out that labor force participation rates in the Ozark Low-Income Area are generally low when compared with the nation as a whole and its more economically developed areas. (See Appendix D for a note on the source and measurement of labor force participation.) There are also important variations in census participation rates which can be observed among the counties within this relatively homogeneous area. It was suggested that labor force participation rates appear to be important statistical variables of use in formulating policy relating to poverty and regional economic development. In the preceding chapter the poverty problem of the Ozark Low-Income Area was established. This will now be related to the area's labor force participation rate problem by reviewing statistical evidence, and by examining selected findings and approaches utilized in other studies.

Labor Force Participation Rates in the Ozark Low-Income Area

Low labor force participation rates tend to be associated with poverty conditions, both within the Ozark Low-Income Area and the nation as a whole. Not only are the area's participation rates low relative to the nation as a whole, but comparative data since 1940 indicate that this is a chronic condition. Moreover, this condition cannot be "explained away" by standardizing the area's participation rates for age, place of residence or race.

The Association of Low Labor Force Participation Rates and Poverty

Although accumulated wealth is obviously important, operational criteria for identifying differences in economic well-being between areas must be based primarily on statistical measures of income. The measure utilized here, as in the preceding chapter, is 1959 median family income. It might be assumed that there is a direct linkage between intercounty labor force participation rates and median family income. The "labor force" measures the economically active segment of a region's population. In comparing two areas, it would appear to follow that the one whose economically active population was relatively larger would have higher real median family income. Such a linkage, however, would only apply under a very strict set of assumptions about the areas being compared. They should have (1) identical wage rates per hour, (2) identical hours worked per person per period, (3) identical family size, (4) identical average family accumulations of stocks of income-producing wealth, and (5) identical price levels. Of course, real world conditions violate these assumptions, and it is not unusual to observe instances in which relatively high income levels are associated with low participation rates and vice versa. Although data may not be reliable, there are cases in which underdeveloped countries show higher proportion of the population economically active than is the case, for example, in the United States.[1] Similar situations can be readily observed in the

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[1] Lloyd G. Reynolds, Labor Economics and Labor Relations (3rd ed.; Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960), p. 345 f.

United States. In an experimental regression model which the investigators used to examine the determinants of interarea labor force participation rates for numbered (i.e., not heavily urbanized) SEA's in Arkansas, Louisiana, Mississippi, Missouri, Oklahoma, and Texas, it was discovered that the beta coefficient for median family income was negative and significant at the 1 percent level.[2]

In general, however, when the observer is dealing with comparisons of labor force participation rates among relatively homogeneous areas, the association of poverty conditions and low labor force participation in the United States is well established.[3] In order to identify whether levels of economic well-being and labor force participation rates were positively related in the 108-county Ozark Low-Income Area, a series of linear regression equations were calculated utilizing appropriate participation rate and median family income figures for various demographic groups. The results of these regressions are presented in Table 3-1. Note that the beta values are positive and significant in all cases save rural farm females. With the exception of the standardized rates, the coefficients for males take on considerably higher values than is the case for females. Moreoever, as the coefficients of determination

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[2] Robert L. Sandmeyer and Larkin Warner, "The Impact of Welfare Programs on Labor Force Participation Rates in the Ozarks," (unpublished paper delivered at Southern Economic Association meetings, November, 1966).

[3] See for example, Susan S. Holland, "Adult Men Not in the Labor Force," *Monthly Labor Review*, XC, No. 3 (March, 1967), 5-15; Martin Segal and Richard B. Freeman, *Population, Labor Force and Unemployment in Chronically Depressed Areas* (Washington: U. S. Department of Commerce, Area Redevelopment Administration, 1964); Geraldine B. Terry and Alvin L. Bertrand, *The Labor Force Characteristics of Women in Low-Income Rural Areas of the South*, Southern Cooperative Series Bulletin 116, June, 1966; and *Manpower Report of the President, 1967* (Washington: U. S. Government Printing Office, 1967), pp. 74-75 and pp. 108-109.

Table 3-1

LINEAR REGRESSION EQUATIONS, LABOR FORCE PARTICIPATION RATES (1960) AND MEDIAN FAMILY INCOME (1959) FOR DEMOGRAPHIC GROUPS, OZARK LOW-INCOME COUNTIES

Dependent variable-- Labor Force Participation Rate Applicable To:[a]	Independent variable-- Median Family Income Applicable To:	Constant	β	Standard Error	Coefficient of Determination	n
(1) All persons	All families	39.21351	.002503**	3.88001	.20750	108
(2) All males	All families	63.16847	.002109**	4.93147	.10319	108
(3) All females	All families	16.83554	.002870**	4.28795	.21988	108
(4) Urban males	Urban residents	49.35966	.004631**	5.63077	.32659	59
(5) Urban females	Urban residents	21.61351	.002566*	4.91129	.16368	59
(6) Rural nonfarm males	Rural nonfarm residents	43.92823	.005868**	6.53572	.30085	108
(7) Rural nonfarm females	Rural nonfarm residents	18.33436	.001604*	7.27071	.02534	108
(8) Rural farm males	Rural farm residents	67.72932	.001588*	5.00842	.03072	108
(9) Rural farm females	Rural farm residents	22.51384	-.000550	7.43639	.00173	108
(10) White males[b]	White families[b]	54.68225	.003691**	5.40403	.23735	108
(11) White females[b]	White families[b]	16.82660	.002462**	4.20853	.18586	108
(12) Nonwhite males	Nonwhite families	19.98694	.016848**	11.32015	.42705	34
(13) Nonwhite females	Nonwhite families	2.42715	.011673**	10.66929	.28713	34

**Significant at the 1 percent level
*Significant at the 5 percent level

[a] Standardized for age on the basis of total population of Arkansas, Missouri and Oklahoma.
[b] Includes all persons for those counties with insufficient nonwhite population for a Census breakout.

Source: U. S., Bureau of the Census, U. S. Census of Population: 1960.

indicate, the different levels of median family income "explain" a much larger portion of the variance in participation rates for males than for females.

Of all the demographic groups presented in Table 3-1, the direct relationship between median family income and participation rates appears strongest in the case of nonwhites. Although the standard errors of the regression equations for nonwhites are relatively large, and data are available for only 34 of the 108 counties, it is nevertheless instructive to note that almost 43 percent of the variance in nonwhite male participation rates can be "explained" by nonwhite median family income. Whether the true dynamics of the relationship runs from high participation rates to high median family income or vice versa is a moot question at this stage. Nevertheless, the nonwhites, who are at the bottom of the area's economic and social structure, exhibit a relatively more direct linkage between median family income and labor force participation than is the case of those in more favored positions. Poverty and low labor force participation rates are more likely to go hand in hand for nonwhites than for the area's whites.

The Chronic Nature of the Area's Low Labor Force Participation Rates

If the trend pattern of participation rates in the Ozark Low-Income Area were following and approaching the national pattern, then there might be reason for doubting that participation rates are key variables associated with the area's chronic low-income problem. An overview of the participation rates for the 15 state economic areas included in the Ozark Low-Income Area is presented in Table 3-2; similar data for counties are presented in Appendix C. The directions of national trends in

Table 3-2

LABOR FORCE PARTICIPATION RATES, BY SEX, UNITED STATES AND OZARK LOW-INCOME AREA STATE ECONOMIC AREAS, 1940, 1950 AND 1960

	Both sexes			Male			Female		
	1940	1950	1960	1940	1950	1960	1940	1950	1960
United States	52.2	53.5	55.3	79.0	78.7	77.4	25.4	28.9	34.5
Arkansas SEA's									
1	45.9	48.1	50.1	77.6	72.4	68.7	14.3	24.2	31.9
2	47.8	47.8	48.1	79.9	73.8	69.1	16.0	19.9	28.5
3	46.7	45.5	46.3	80.0	74.0	67.1	12.3	17.0	26.6
4	46.6	46.4	45.0	76.1	73.5	65.4	16.2	19.9	25.9
9	46.7	48.3	43.8	82.2	80.9	66.3	9.2	12.3	21.6
Missouri SEA's									
4	46.6	49.2	48.5	76.2	76.4	70.6	18.0	23.7	28.7
5	47.2	47.7	56.8	77.9	73.6	77.3	13.9	20.5	28.1
7	45.3	49.1	48.1	78.1	75.5	69.0	10.7	23.4	27.6
8	46.0	46.1	42.8	76.3	73.1	63.0	13.8	18.8	23.4
Oklahoma SEA's									
3	46.3	47.5	47.6	74.1	73.1	70.4	17.2	22.5	26.2
6	45.8	44.6	44.2	76.1	71.4	65.2	14.4	19.0	24.8
7	45.4	45.0	46.2	75.6	72.2	68.7	14.2	18.2	25.4
8	45.5	43.6	43.3	73.6	67.5	63.5	16.9	20.4	24.6
9	43.5	41.5	39.0	71.1	65.7	55.9	12.7	16.4	22.2
10	42.6	41.0	36.3	72.6	70.0	52.1	9.8	8.1	20.4

Source: U. S., Bureau of the Census, U. S. Census of Population: 1940, Vol. II, Characteristics of the Population, 1943.

Donald J. Bogue and Calvin L. Beale, Economic Areas of the United States (Glencoe, Ill.: The Free Press, 1961).

U. S., Bureau of the Census, U. S. Census of Population: 1960, General Social and Economic Characteristics, United States Summary, Final Report PC(1)-1C, 1962.

U. S., Bureau of the Census, U. S. Census of Population: 1960, Selected Area Reports, State Economic Areas, Final Report PC(3)-1A, 1963.

participation rates are repeated in the area. Rates for males declined between 1940 and 1960 and rates for females increased. However, for all three census years, virtually all of the rates presented in Table 3-2 are less than their national counterparts. Moreover, the male participation rates, which were generally lower than the national average in 1940, tend to decline at a much more rapid rate during the following twenty years than is the case for the nation as a whole. Extreme examples of this pattern are found in Oklahoma SEA's 9 and 10 (encompassing nine counties) in which the male participation rates declined by more than 15 points during the twenty years following 1940. In 1960, only 14 of the area's 108 counties exhibited male participation rates of over 70 percent. Thus, the rest fell considerably short of the national average (77.4 percent). Twenty-three counties showed male rates below 60 percent -- more than 17 points below the national figure.

The trend behavior of the female rates relative to the national pattern is in sharp contrast to that of males. While the male rates started low and fell much further short of the national average as the two decades progressed, the females appeared to be catching up with the national pattern. As Table 3-2 indicates, 1960 female rates in the area in 1960 were still lower than the national participation rate, but they did not fall as far short of the national average in 1960 as they did in 1940.

These trend patterns in participation rates for the Ozark Low-Income Area are consistent with the changing employment composition described in Chapter II. Much of the decline in the male participation rates is related to the rapid contraction of employment opportunities in the agricultural sector. For females, however, this has meant a rapid decline in the demand for the "non-labor force" activities traditionally associated with the farmer's or farm laborer's wife. This probably accentuated the relative increase in female participation rates because conditions were particularly favorable for expansion of enterprise relying heavily on low-wage, low-skilled, female labor.

Turning to total participation rates, Table 3-2 indicates that the Ozark Low-Income Area has consistently fallen short of the national average. However, most of the SEA's participation rates show remarkable stability in light of the striking changes in the rate patterns for males and females.

Thus, while the Ozark Low-Income Area has continued to exhibit a chronic pattern of low labor force participation rates, it also presents a case in which the national trends with respect to male and female rates are greatly magnified. This suggests that the reorientation of American family life in which females have become more important sources of family economic support has occurred much more rapidly in this area since 1940 than is the case for the nation as a whole. There is a possibility that the area may possess some characteristics of an "ideal type" with respect to this particular problem of social adjustment.

Standardization and the Area's Low Participation Rates

The above discussion establishes clearly the chronic and extensive nature of the Ozark Low-Income Area's low labor force participation rate problem. Because of the direct relationship between low labor force participation rates and poverty conditions, this is certainly an important economic and social problem, no matter what its causes may be. However, participation rate patterns for the various age-sex groups are sufficiently uniform so that it is desirable to utilize standardization procedures in order to eliminate the most fundamental or obvious causes for interarea variations.[4]

Because of the regular manner in which participation rates tend to vary with age, a frequently used procedure involves standardization of areas' participation rates for age so that an area, for example, with a high proportion of persons in the older age brackets would not show a

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[4] See, for example, Clárence D. Long, The Labor Force Under Changing Income and Employment (Princeton: Princeton University Press, 1958), pp. 51-52. Using Long's notation the standardization procedure is as follows:

s_i = labor force of any age group
p_i = population of that age group
$l_i = s_i/p_i$ or labor force participation rate
$r_i = \frac{p_i}{p}$ or the standard or a fixed ratio of the number of persons to the number 14 and older
L_m = male labor force participation rate
L_f = female labor force participation rate
L = total labor force participation rate
$\overline{L}$ = standardized participation rate

Therefore, for each county in the Ozark region the standardized participation rates were computed as follows:

$$\overline{L}_m = \frac{\Sigma(l_m \cdot r_m)}{\Sigma r_m} \quad , \quad \overline{L}_f = \frac{\Sigma(l_f \cdot r_f)}{\Sigma r_f}$$

and

$$\overline{L} = \frac{\Sigma(l_i \cdot r_i)}{\Sigma r_i}$$

higher participation rate solely because its age distribution differed from that of another. Since median age is generally higher in counties of the Ozark Low-Income Area, part of the chronic low labor force participation rate condition can be explained by the population's age composition. When participation rates for males for the 108 counties are standardized on the basis of the 1960 age composition of the three-state area of Arkansas, Missouri, and Oklahoma, the raw rate for males is increased by 4.2 points while that for females increases by only 1.0 points (Table 3-3). Even after standardization for age, both male and female rates remain considerably below the three-state and national figures.

The 1960 census reports permit standardization on the basis of age at the county level only for males and females. It is impossible to develop age-standardized data for urban residents as a group or for the other demographic groups listed in Table 3-3. At the national level there is a notable tendency for participation rates of rural nonfarm residents and nonwhites to be relatively low. However, concentrantions of these residents cannot serve as sufficient explanations for the area's low participation rates. Table 3-3 indicates that labor force participation rates for rural nonfarm residents and for nonwhites, and for the other groups as well, still fall very far short of the relevant national rates.

Although age; rural, rural nonfarm, rural farm; and white-nonwhite features of the area's population have a bearing on low labor force participation rates, these alone do not suffice as an explanation for the area's problem. In other words, even if the Ozark Low-Income Area exhibited hypothetically the same age distribution, the same rural-urban pattern, and the same proportion nonwhite as that of the nation as a whole (i.e., if the effect of these variables were completely "washed out" through standardization), participation rates would still be

Table 3-3

LABOR FORCE PARTICIPATION RATES FOR DEMOGRAPHIC GROUPS, UNITED STATES, AND OZARK LOW-INCOME AREA, 1960

	Male				Female			
	United States	Arkansas Missouri Oklahoma	Average 108 counties	Area-wide rate	United States	Arkansas Missouri Oklahoma	Average 108 counties	Area-wide rate
All persons	77.4	73.9	65.2	67.4	34.5	31.4	24.3	26.1
All persons standardized for age[a]	----	----	69.4	----	----	----	25.3	----
Urban residents	78.7	76.6	67.9	69.6	37.3	36.8	31.9	33.0
Rural nonfarm residents	73.2	67.4	60.3	63.7	28.8	23.8	22.8	22.4
Rural farm residents	78.0	75.0	71.8	72.3	22.9	19.5	21.1	21.6
Whites[b]	78.0	81.6	65.7	68.0	33.6	30.9	24.2	26.1
Nonwhites[b]	72.1	65.4	53.4	54.5	41.8	35.2	26.0	26.5

[a] Standardized on the basis of the 1960 age composition of the three-state area of Arkansas, Missouri and Oklahoma.

[b] Rates for nonwhites based on 34 counties; figures for whites assuming no nonwhite population in counties not reporting nonwhite labor force data.

Source: U. S., Bureau of the Census, U. S. Census of Population: 1960 sufficiently low as to warrant concern over the extent of human resource utilization.

Participation Rates in the Ozark Low-Income Area: Research and Policy Implications Derived from other Studies

Low labor force participation rates in the Ozark Low-Income Area are part of a chronic poverty cycle. The period since 1960 has witnessed a great expansion and extension of public policies aimed at alleviating regional, racial, and ethnic concentrations of poverty. The central theme of recent United States anitpoverty-regional-development policies has been the development of new employment opportunities and the fitting of underutilized human resources into these opportunities. The success of such programs in an area like the Ozark region must mean breaking down economic, social, and cultural impediments to labor force participation. Economists and other social and behavioral scientists have devoted considerable research effort to the study of labor force participation. Only a small part, however, has been directed specifically at regional concentrations of poverty and low participation. Nevertheless, there are elements in much of this research which can have applications to an area such as the Ozarks, even though the original policy orientation of the work relates to rather different types of problems.

Policy issues leading to the study of labor force participation rates can be classified roughly into four categories.[5] No assertion is made that all studies fall neatly into these categories or that these are the only ones which might be appropriate.

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[5] For an excellent review of social scientists' work on the labor force, together with an extensive bibliography, see Philip Hauser, "Labor Force," in Handbook of Modern Sociology (Chicago: Rand McNally and Company, 1964).

(1) The issue of economic growth in the context of an assumed need for expansion of the labor force.

(2) Micro-economic problems involving particular local labor markets.

(3) The problem of cyclical instability in which estimates concerning the "unemployed" segment of the labor force must serve as a key indicator of the success of monetary and fiscal policy.

(4) Policies dealing with structural labor market problems and the resulting disparities in levels of economic well-being experienced by certain groups and areas in the economy.

Two additional types of labor force participation rate analyses do not appear to be related in any specific way to policy problems. The first involves thorough historical compendiums on labor force participation rates such as those undertaken in the 1950's by Long[6] and Bancroft,[7] or earlier studies such as those of Durand,[8] and Jaffe and Stewart.[9] Works of this type provide the social scientist with a very necessary and efficient point of departure in any field of research. With respect both to raw data and preliminary analyses of the correlates of varying participation rates, the availability of broad source works is invaluable. The second nonpolicy oriented class of labor force participation rate studies involves a very considerable amount of literature on the behavior of females. Examples include studies of Cain,[10] Mincer,[11] and Rosett.[12] The motivation behind these studies is found in the strong trend increase in female participation rates. The need to "explain" the labor force behavior of females in the nation as a whole involves a somewhat more "pure" type of scientific inquiry aimed at a broad and important social phenomenon. However, as will be indicated below, some of this interest is also a spin-off from analyses of the cyclical secondary labor force.

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[6] Long, op. cit.

[7] Gertrude Bancroft, The American Labor Force: Its Growth and Changing Composition (New York: John Wiley and Sons, Inc., 1958).

[8] John D. Durand, The Labor Force in the United States 1890-1960 New York: Social Science Research Council, 1948).

[9] A. J. Jaffe and C. D. Stewart, Manpower Resources and Utilization (New York: John Wiley and Sons, Inc., 1951).

Labor Force Participation and Long-Run Growth

The first class of labor force participation rate analyses relating to problems of long-run economic growth did not involve the generation of sophisticated analytical techniques. Analyses apply mainly to an earlier era in the development of western industrial society, and the participation rate problem is really more implicit than explicit. Grampp tells us, for example, that the mercantilist Petty

> estimated that, if all children between 6 and 16 were employed, the national wealth of England would be increased by five million pounds annually (about the year 1662). Almost all mercantilists considered ways of bringing more people into the labor force. Some writers wanted to turn men away from the army and the navy and to gain full employment, to turn criminals to legitimate activity, and above all to rehabilitate the poor and

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[10] Glen G. Cain, Married Women in the Labor Force: An Economic Analysis (Chicago: The University of Chicago Press, 1966).

[11] Jacob Mincer, "Labor Force Participation of Married Women: A Study of Labor Supply," Aspects of Labor Economics (Princeton: Princeton University Press, 1962).

[12] Thomas F. Dernberg, Richard N. Rossett, and Harold W. Watts, Studies in Household Economic Behavior (New Haven: Yale University Press, 1958).

> indigent, whom circumstances or choice had deprived of the will to work. That is, they wished to utilize the capacities of those groups whose labor was being wasted.[13]

A similar analytic element is present in aspects of American economic policy prior to the first world war. Participation rates of slaves requires no comment. The policy of unrestricted immigration attracted to the United States those in the age groups with the highest participation rates.[14] About all that this type of analysis implies is that long-run growth in the Ozarks will be associated with rising participation rates.

Local Labor Market Problems

The second class of policy-oriented labor force participation rate analyses relates to micro-economic problems in the context of particular local labor markets. The problems involve, on the one hand, the potential expansibility of a community's work force in response to the opening of a new plant and, on the other, the effect on the labor force of a considerable decline in a community's employment opportunities. It is not unusual to find, for example, state employment security agencies estimating the expansibility of a community's work force by applying the national average participation rate figures to a community's population and noting the difference between actual labor supply and potential supply if the community's participation rate were at the national level.[15] Obviously, this methodology is extremely crude, and if it has any relevance at all, it must be to local labor markets presenting lower than average participation rates. When the subject at hand relates to a local labor market solely, there is some question as to whether research having as its central focus labor force participation rates represents an appropriate methodology. Much broader gauge analyses such as exhibited in Reynolds[16] and Meyers and Schultz[17] is more sensible. The paucity of research work in this particular class attests to this fact.

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[13] William D. Grampp, Economic Liberalism, Vol. I: The Beginnings (New York: Random House, 1965), p. 70.

[14] For a review of some of these major historical-demographic influences on labor force participation, see Stanley Lebergott, "Population Change and the Supply of Labor," in National Bureau of Economic Research, Demographic and Economic Change in Developed Countries (Princeton: Princeton University Press, 1960), pp. 377-414.

[15] Oklahoma Employment Security Commission, Economic Base Report: Sequoyah County, Oklahoma (Oklahoma City: Oklahoma State Employment Service, 1964).

Cyclical Labor Force Behavior

It was, of course, the Great Depression in the United States which directed social scientists to develop new concepts and definitions for measuring the size of the labor force and to undertake a vast array of studies dealing specifically with labor force participation rates. At the same time that definitional concepts were sharpened and the census shifted from the gainful worker to the activity-oriented definition of labor force, those analyzing the data became increasingly aware of the fluid nature of what was being measured. The implications of this fluidity had a direct bearing on the usefulness of unemployment rate data. Slack economic conditions caused some unemployed members of the labor force to become discouraged and drop out. On the other hand, the pressures of strained family budgets caused other "secondary workers" to enter the labor force. It was obvious that unless the "additional worker effect" was perfectly offset by the "discouragement effect," unemployment rates and labor force participation rates might be giving a false picture of actual labor supply conditions. A vigorous controversy between D. D. Humphrey and W. S. Woytinsky appeared in the Journal of Political Economy in 1940 relating to Woytinsky's assertion that secondary workers were responsible for a significant element of those classed as unemployed.[18] More recently, Strand and Dernberg,[19] Cartwright and Lampman,[20] and Tella[21] have undertaken research indicating that labor force data may tend to understate the true size of the labor force in a period of slack economic activity.

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[16] Lloyd G. Reynolds, The Structure of Labor Markets (New York: Harper and Brothers, 1951).

[17] Charles A. Meyers and George P. Shultz, The Dynamics of a Labor Market (New York: Prentice-Hall, Inc., 1951).

Just as the adequacy of aggregate measures of unemployment are important to national monetary and fiscal policy, so measures of unemployment for small areas such as counties and subregions of the Ozarks have become increasingly important with respect to regional and local problems. Reliance on unemployment rates in the designation of areas eligible for federal area development assistance means that it is now quite important to identify whether estimates by state employment agencies get at the true extent of slack labor market conditions at the local level.[22] Even if it were true at the national level that the additional worker and discouragement effects offset each other, such an offset could hardly be expected to be characteristic of regions or localities whose economic and social features departed considerably from national norms. Liebhafsky for example, has critized the methodology behind the definitions of labor force used in the decennial censuses and the Current Population Survey because of the inability of these surveys to identify the true extent of "inactive" work seekers--a group which he believes to be relatively prevalent among lower income groups.[23]

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[18] See Don D. Humphrey, "Alleged Additional Workers in the Measurement of Unemployment," Journal of Political Economy, XLVIII (June, 1940), 412-419, and W. S. Woytinsky, "Additional Workers on the Labor Market in Depressions: A Reply to Mr. Humphrey," Journal of Political Economy, XLVIII (October, 1940), 735-739.

[19] Kenneth Strand and Thomas Dernberg, "Cyclical Variation in Civilian Labor Force Participation," Review of Economics and Statistics, XLVI (November, 1964), 378-391.

[20] Phillip W. Cartwright and Robert J. Lampman, "A Measure of the Utilization of Labor in the Economy," Industrial and Labor Relations Review (January, 1958), pp. 220-230.

[21] Alfred Tella, "The Relation of Labor Force to Employment," Industrial and Labor Relations Review, XVII (April, 1964), 454-469.

[22] See John H. Lindauer, "The Accuracy of Area Unemployment Estimates Used to Identify Depressed Areas," Industrial and Labor Relations Review, IXX (April, 1966), pp. 377-389.

One of the most interesting methodological features of the controversy over the discouragement and additional worker hypotheses relates to the economic unit that is either implicit or explicit in the analysis. Rather than focusing upon individual decision-making processes concerning labor force participation, the whole concept of a "secondary" labor force is based on assumptions of the family as a decision-making unit. Unfortunately--though certainly understandably--most analysts dealing with this issue still prefer to work with aggregate data such as those published by the census and Current Population Survey. An important exception to this generalization is found in studies focusing on the labor force participation behavior of females.[24]

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[23] E. E. Liebhafsky, A Methodological Approach to Identification and Classification of Certain Types of Inactive Work-Seekers, A Report to the United States Department of Labor.Office of Manpower, Automation and Training, Prepared by the Center for Research in Business and Economics (Houston: University of Houston, 1965).

[24] Thomas A. Mahoney, "Factors Determining the Labor-Force Participation of Married Women," Industrial and Labor Relations Review, pp. 563-577; Mincer, *op. cit.*; and Cain, *op. cit.*

Structural Participation Rate Problems

In the past five or six years much of the important research in the labor force participation rate field has been a result of the fourth type of policy problem. In a sense, this fourth class of study represents a continuation of the studies of the impact of cyclical instability on labor force participation rates in the context of the apparent structural unemployment evident in the U. S. economy in the late 1950's and early 1960's. Increased federal concern over problems of regional development and poverty has led some to focus on labor force participation rates as an important variable to use in analyzing the potentials for human resource development.

Methodologies used in the recent class of labor force participation rate studies have included descriptions based on simple cross-classifications of data about participants and nonparticipants such as may be found in Holland,[25] Segal and Freeman,[26] and Terry and Bertrand.[27] For purposes of policy formulation and evaluation, only the naive would assert that more exotic analytic approaches are likely to be more effective than good, incisive descriptions of simple trends, percentage changes, and results of cross-classification.

More sophisticated methodologies used in this class of study (as well as a number of studies examining the "secondary" labor force) involve multiple regression analyses. Typical examples of this approach are found in studies by Barth,[28] and by Bowen and Finegan.[29] These two works bear a sufficient family resemblance to the approach undertaken in the following chapter of this report dealing with statistical analyses of participation rates in the Ozark Low-Income Area to warrant some comment on the specific approaches utilized therein. The stated objectives of both of these studies reflect a new policy problem stimulus. The Bowen and Finegan study works with data for metropolitan areas from the censuses of 1940, 1950, and 1960. They note, for example, that "how much of a social problem, as well as an economic problem is entailed in 'hidden unemployment' depends in part on the particular groups whose labor force participation is most sensitive to the overall level of unemployment."[30] They are also interested in learning "more about the effects on labor force participation of factors other than unemployment--factors such as educational attainment, earnings opportunities, other 'nonlabor' income, and color."[31] This policy orientation also appears in Barth's study utilizing the 1960 census on a county-by-county basis for the state of Michigan. He notes that focus upon a specific state "permits an evaluation of the relationship of labor force participation rates to the size of the agricultural sector" and that it might "provide a useful framework for state or regional planners who are currently attempting to forecast the future size and composition of the labor force in specific areas."[32]

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[25] Holland, _op_. _cit_.

[26] Segal and Freeman, _op_. _cit_.

[27] Terry and Bertrand, _op_. _cit_.

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[28] Peter S. Barth, "A Cross-Sectional Analysis of Labor-Force Participation Rates in Michigan," Industrial and Labor Relations Review (January, 1967), 234-249, (See also Barth's unpublished Ph.D. dissertation, "The Labor Force and Labor Force Participation Rates: A Study of Michigan," University of Michigan, 1965).

[29] William G. Bowen and T. A. Finegan, "Labor Force Participation and Unemployment," Employment Policy and the Labor Market, ed. Arthur M. Ross (Berkeley: University of California Press, 1965).

[30] *Ibid*., p. 116.

[31] *Ibid*.

The primary objective of the Bowen and Finegan study is to "estimate the effects of differences in local labor market conditions on the labor force participation rates of various subsets of the population . . . ."[33] They point out that the expected determinants of labor force participation can be grouped under three headings: "Tastes," "Affluence," and "Incentives," They then proceed to select "variables which could be expected to represent tastes, affluence, and incentives in the labor force equation."[34]

The Bowen and Finegan study implies that the individual reacting to local labor market conditions is the focal unit for analysis of decisions concerning participation or nonparticipation. For example, the authors state that "an individual's decision to participate or not participate in the labor force will depend on two sets of comparisons: (1) the relative attractions of market labor and leisure, and (2) the relative attractions of market and nonmarket labor"[35] The independent variables they use in "explaining" labor force participation of "prime age" males (25-54 years of age) adheres to this principle. However, in "explaining" labor force participation of the other "groups" (older males married women with husband present, teen-agers of both sexes), they also consider family dimensions as a basis for selecting certain independent variables.

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[32] Barth, op. cit., p. 234

[33] Bowen and Finegan, op. cit., p. 115.

[34] Ibid., p. 118.

[35] Ibid.

Summary

In the Ozarks, the idle poor exceed the idle rich by a wide margin. This is a chronic condition and there is evidence that it is worsening with respect to males. Because of the close association of low labor force participation rates and poverty, this characteristic of human resource non-utilization appears as a significant dimension in both the formulation and the evaluation of antipoverty regional development policies. Some light is shed on approaches to research and policy formulation in the Ozark Low-Income Area by other studies of labor force participation rates. The basic purpose of analyzing labor force participation rates is the identification of correlates or "causes" of variation. Out of this arise two key research and policy issues. The first relates to the adequacy of the current approaches to the collection of information on the size of the labor force. The second involves the problem of conceptualizing about how decisions are made concerning labor force participation.

CHAPTER IV

STATISTICAL ANALYSES OF PARTICIPATION RATES IN THE OZARK AREA: 1960

The first part of this chapter deals with the development of a model of the family as a decision-making unit regarding labor force participation. Independent variables which fit into this model are described, and their expected impact on participation rates is analyzed. Because of certain statistical problems associated with retaining all of the observations and independent variables, some had to be eliminated. The methods by which they were eliminated are discussed. Finally, an analysis of the results of the stepwise multiple regression program is presented.

The Family as a Decision-Making Unit Regarding Labor Force Participation

The investigators suggest that meaningful research should focus on participation and nonparticipation as the end product of a decision-making process. The issue then should be one of attempting to gain some insights into this decision-making process. Who, for example, makes the decision concerning participation versus nonparticipation? Traditional micro-economic theory relating to consumer demand is couched with the individual as the decision-making unit. However, much fruitful research into the behavior of aggregate consumption functions has focused upon the household or family unit.[1] It was noted in Chapter III that early controversy over the additional worker hypothesis by definition focuses on the family rather than the individual. Jacob Mincer, who has worked the field of labor force participation rates extensively, has argued that "recognition of the family context of leisure and work choices, and of the home-market dichotomy within the world of work, is essential for for an analysis of labor force behavior of married women, and perhaps quite important for the analysis of other family members, including male family heads."[2] An intriguing chapter in Orcutt's Microanalysis of Socioeconomic Systems: A Simulation Study[3] also suggests the fruitfulness of viewing these decisions in the context of the family unit.

It is quite possible that those doing research in this field could learn a great deal from the organization theorist, for, after all, the family is one of the basic organizations of modern society. In commenting on organization theory Boulding points out the following:

> The traditional economic concept of the actor is that of the person--a single consumer or producer, directing his behavior toward this or that variable as the conditions which surround him change. We have been

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[1] Robert Ferber, "Research on Household Behavior,"Surveys of Economic Thought, Vol. III: Resource Allocation (New York: St. Martin's Press, 1966).

[2] Jacob Mincer, "Labor Force Participation of Married Women: A Study of Labor Supply," Aspects of Labor Economics (Princeton: Princeton University Press, 1962), p. 66.

[3] Guy H. Orcutt, Martin Greenberger, John Korbel, and Alice M. Rivlin, Microanalysis of Socioeconomic Systems: A Simulation Study (New York: Harper and Brothers, 1961).

> increasingly aware that most decisions are made in a framework of organization, even though it remains true that decisions are actually made by persons. A person acting in a role, however, is not the same thing as a person acting on his behalf . . . . The life of any individual therefore can be conceived as a series of intersecting roles, in each of which he plays a some-different part.[4]

Burtt contends that conventional theoretical analysis of the choice between work and leisure "centers on the individual as the decision-making unit and does not consider him as a member of a social group of any kind, even a family."[5] He goes on to say that,

> [theoretical analysis] thus assumes that the individual makes the comparison of disutilities and utilities and that a decision imposed upon him by someone else would not necessarily coincide with the one he would make; freedom to make one's own decision concerning one's own welfare is regarded as the anchor of the labor market. But most workers belong first to family units of two or more persons; job decisions are the product not solely of a comparison of their own gains, but also of the many interpersonal compromises fashioned within the family circle.[6]

Long's work points out that the family as a decision-making unit is particularly pertinent to questions concerning labor force participation. The increasing participation of females is attributed, at least partially, to changes in the family's attitude toward the role of the female in the household.[7]

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[4] Kenneth E. Boulding, "The Present Position of the Theory of the Firm," Linear Programming and The Theory of the Firm, Edited by Kenneth E. Boulding and W. Allen Spivey (New York: The Macmillan Company, 1960), p. 11.

[5] Everett Johnson Burtt, Jr., Labor Markets, Unions, and Government Policies (New York: St. Martin's Press, 1963), p. 44.

[6] Ibid., pp. 44-45.

[7] Clarence D. Long, The Labor Force Under Changing Income and Employment (Princeton: Princeton University Press, 1958), Chapter 13.

He also notes that the family has "altered [its] attitude toward the question of whether . . . children should work."[8] These changes in attitudes have resulted in an increase in the participation of females and a decrease in the participation of children. Commenting on differences in family characteristics and labor force participation, Long states:

> Large and small families may have very different participation rates, as may families with high and low incomes per member--and differences remain after standardization for age, sex, color, or other demographic differences, or after taking into account the income of the head of the family. Unfortunately the census, while it has given a great deal of family information on both labor force and population, has never classified the data for computing participation rates of families; yet many of the decisions to enter or leave the labor force are family decisions.[9]

The family as a decision-making unit regarding labor force participation is also recognized in the 1967 Manpower Report of the President.[10] In a review of data on men outside the labor force it is pointed out that,

> The amount of economic hardship resulting from the fact that a man is not a worker is determined largely by his family responsibilities. Concern centers on the situation of the mature men outside the labor force, many of whom are family heads, and on the consequences for the people who would normally depend on them for support.[11]

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[8] Ibid., p. 25.

[9] Ibid., p. 26.

[10] Manpower Report of the President (Washington: U. S. Government Printing Office, 1967).

[11] Ibid., p. 132.

A question which has been of primary interest to the investigators is then put forth.

> How were these families supported? The surveys here reported do not provide a full answer to this question. In some cases, wives, children, and other secondary wage earners took jobs in order to contribute to family income.[12]

It is one of the main contentions of this study that there will be no satisfactory answer to this question until surveys are designed to probe the family decision-making process regarding labor force participation.

Thus it is asserted that the family rather than the individual is the appropriate starting point for examining decision-making concerning labor force participation. This approach appears to have considerable heuristic value and also has obvious implications concerning survey research methods.[13] Most detailed analyses of the determinants of labor force participation rates have focused upon urban areas or upon relatively highly developed states. It may well be that focus on the individual with respect to male participation rates is a fairly meaningful approach in such settings. Even this, however, is not entirely clear. As Liebhafsky's work in Houston has shown, a thorough understanding of the different characteristics which the family as an institution exhibits in the urban ghetto is a prerequisite to understanding the patterns of nonparticipation for Negro urban males.[14] In the Ozark region male labor force behavior exhibits elements common to those usually associated with the "secondary" labor force. Thus the family as a decision-making unit is probably the place to begin.

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[12] Ibid.

[13] See, for example, James N. Morgan, Ismail A. Sirageldin, and Nancy Baerwaldt, Productive Americans (Ann Arbor Institute for Social Research, The University of Michigan, 1966).

[14] E. E. Liebhafsky, A Methodological Approach to Identification and Classification of Certain Types of Inactive Work-Seekers, A Report to the United States Department of Labor, Office of Manpower, Automation and Training (Houston: University of Houston, Center for Research in Business and Economics, 1965).

Within the region, participation rates for males between the ages of 25 and 64 tend to be extremely low. For males in the age range from 25 to 34 years, the 1960 census indicates that in 44 counties, participation rates were below 90 percent--whereas the national rate for this age group was 95 percent. A similar pattern of rates below 90 percent is exhibited in 43 counties for males 35 to 44. Participation rates for those 45 to 64 were less than 80 percent in 27 of the counties in spite of the fact that the national average rate for this age group was 89 percent. Hence, it is not unusual for between 15 and 20 percent of the "prime age" male population of these counties to be reported as neither at work nor looking for work. Several extreme examples help to point up the striking extent of male nonparticipation. For the 25 to 34 age bracket, rates of 62 and 71 percent are observed in Perry County, Arkansas, and Saline County, Missouri, respectively. In Adair County, Oklahoma, one-fourth of the males 35 to 44 were neither at work nor looking for work. The same proportion for the 45 to 64 age bracket was economically inactive in Iron and Logan Counties in Missouri. These low rates cannot be explained by concentrations of students or institutional residents. American society's value system, with respect to work, places men in the 25 to 55 age bracket in a role in which nonparticipation, unless associated with disability, is viewed as an aberration. What, for example, was the financial basis permitting almost 4 out of 10 males aged 25 to 34 in Perry County, Arkansas, to avoid participation? Here again we are led intuitively back to the family as a financial unit.

Tentative Model of Family Behavior

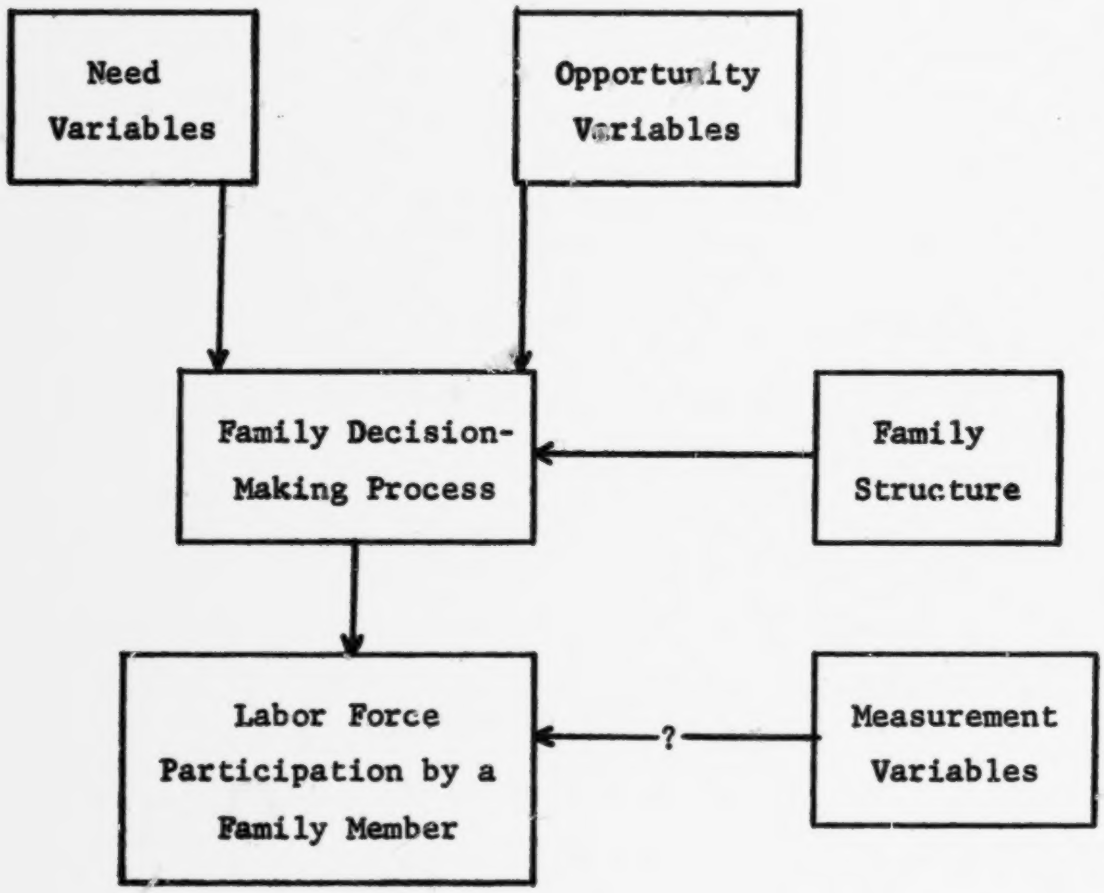
The crude model which was developed prior to the statistical analyses is represented in the diagram in Figure 4-1. Key factors affecting the labor force participation were classified as need variables, opportunity variables, and family structure variables. The family or household is assumed to be the basic decision-making unit. A fourth set, referred to as measurement variables, relates to the adequacy of the census definition of "labor force."

The family structure variables get at the internal workings of the decision-making unit. The process by which reactions are formulated to stimuli from the need and opportunity variables is assumed to depend partially upon family structure variables. Cultural attitudes concerning the role of individuals in the family can be identified partially on the basis of age, sex, and race, and whether the individual is thought to have primary or secondary responsibility for the well-being of the family. Dimensional aspects of the family such as number and age of children and other dependents also affect decisions concerning participation.

Need and opportunity variables both work to establish consequences flowing from nonparticipation. Need variables push family members into the labor force; opportunity variables pull members into it. This distinction may be difficult to maintain, but the following argument is set forth in its defense. The failure to respond to need variables means that the family suffers a deterioration in its economic well-being and social status. For example, failure to maintain debt payments means bankruptcy, and inability to maintain a given level of housing expenditure means movement to a poor neighborhood. On the other hand,

Figure 4-1

FRAMEWORK FOR ANALYZING LABOR FORCE PARTICIPATION


Need Variables
Opportunity Variables
Family Decision-Making Process
Family Structure
Labor Force Participation by a Family Member
?
Measurement Variables

response to the opportunity variables means an improvement in economic well-being and a possible increase in social status. Need variables probably operate in a much shorter-run frame of reference than the opportunity variables and may very well have a much stronger bearing on labor force participation as of a particular moment in time. Reaction to the opportunity variables may require a complex set of sub-reactions such as achievement of higher educational levels, movement to new locations, and the family's capitalizing on the development of social policy reducing racial discrimination.

The Independent Variables

The model developed above provides the basis for hypothesizing that an individual's decision to participate or not to participate in the labor force will depend on the structure of the family, the family's needs, and opportunities available. This section is devoted to a discussion of a set of nineteen variables derived from census and other published data which could be expected to represent the components of the model. The sources for these variables are presented in Appendix E.

Family Structure Variables

Four variables are used to get at the internal workings of the decision-making unit. These are (1) percent of the population which is nonwhite, (2) women 14-65 with children under six: ratio of those with to those without a husband present, (3) percent of persons 14 through 17 enrolled in school, and (4) percent of the population that is rural farm.

Percent of Population Nonwhite--Cultural variation, together with the cumulative impact of years of discrimination, may mean that the nonwhite family's attitudes toward market work may, on the average, be quite different from that of the white family. The female is more likely to be the dominating force in family decision-making in the nonwhite than in the white family. Nonwhite families are more frequently headed by females than is the case with white families.[15] Moreover, there is evidence that even when the husband is present, Negro husbands make fewer family decisions than white husbands of the same occupational strata.[16] Tentative hypotheses about race and family structure are the following: (1) Labor force participation rates for females will be positively related to percent of a county's population that is nonwhite because nonwhite females are likely to have (or take) responsibility for the economic well-being of the family. (2) For males, the relationship will be reversed because the nonwhite male gains less satisfaction from labor activity aimed at improving the family's economic status.

It should be noted at this point that it is far from clear whether the white-nonwhite distinction should be viewed as a family structure variable, or whether the impact of discrimination should be treated as an opportunity variable. The investigators initially chose to do both.

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[15] The deterioration of the Negro family was a main theme of the "Moynihan report". U. S. Department of Labor, Office of Policy Planning and Research, The Negro Family (Washington: U. S. Government Printing Office, 1965). Although the focus of that document was primarily Negro rather than nonwhite, it is interesting to speculate the degree to which some of the features discussed therein apply to other nonwhite groups--especially the American Indian. An important portion of the nonwhite population of the Oklahoma Ozarks is Indian. A tentative conclusion can be derived from the fact that the frequency with which females are household heads is virtually as great for Indians as for Negroes. The Moynihan report contains a table (p. 17) showing that the percentage of Negro families with female heads in the South census division is 24.2, 20.0, and 11.2 respectively for urban, rural nonfarm, and rural farm groups. The parallel statistics calculated for Indians are 17.1, 18.6 and 11.2. United States Census of Population, 1960 PC(2)-1C, Table 10. Thus, the Indian family would appear to exhibit some structural characteristics which make it similar to the Negro family.

[16] Robert O. Blood and Donald M. Wolfe, Husbands and Wives: The Dynamics of Married Living (Glencoe, Ill.: The Free Press, 1960), pp. 34-351.

Women 14 to 65 with Children Under 6: Ratio of Those With to Those Without Husband Present -- Traditionally, it has been thought that the married woman's place is in the home. However, the role of the female in the work force has been changing. It is now quite common for the woman to work prior to marriage, withdraw from the labor force when she has children, and then re-enter the labor force when these children reach school age. However, this pattern is influenced by whether or not the husband is present. Presence of a husband in the household permits a woman with children under six to stay at home. On the other hand, if the husband is not present, the woman is placed in the position of household head and therefore is more likely to participate in the work force. This variable might be important in a predominantly rural area, such as the Ozark region, where a more traditional view may be held with respect to a married woman's role in the family.

In the regression analyses, this variable is applied only to females between 14 and 64. It is likely that females in the 45-64 group should also have been excluded because of the low probability of their having children under six; the Census, however, reports relevant data as applying to women "under 65".

Percent of Persons 14 through 17 Enrolled in School -- This variable is applicable only to those in the 14 through 17 age brackets. Those who drop out of school would more likely appear to be in the labor force than those still in school.

Percent of Population That is Rural Farm -- The inherent nature of family life on farms suggest a strong probability that both adult males and females living on farms should be reported as being in the labor force. It would be an unusual farm wife who did not work "without pay for fifteen hours or more on a family farm." The same could be said about the farm children 14 and over.

Need Variables

Need to participate in the labor force on the part of family members in a particular county can be measured by three variables. These are (1) cost of living, (2) size of income not dependent on participation, and (3) income distribution.

Median Gross Rent -- Other things equal, a low cost of living in a particular county might permit individual family members to avoid labor force participation. Low living costs may also attract older people who are not in the labor force. Unfortunately, a cost of living index is not available on a county-by-county basis. Therefore, the investigators had to search for some measure which would serve as a proxy for intercounty differentials in cost of living. It is reasonable to assume that the cost of food at grocery stores does not vary significantly within the area. There appears to be no feasible way of estimating variations in the cost or the importance of home-produced food. On the other hand, the 1960 *Census of Housing* discloses rather marked differentials in the cost of rental housing. Therefore, it was determined that the *median gross rent* figure could serve as a useful proxy for differentials in the cost of living.

It is clear that intercounty differentials in median gross rent reflect to a large extent variations in the quality of housing, and therefore this need variable is not strictly independent of other socioeconomic factors at work in a given county. Quality of housing is poor and median gross rent is low in an area primarily because the demand for such housing will not support better facilities or higher rent. Nevertheless, the relatively abundant supply of such housing in a low-income area can serve as a partial offset relieving family members from the necessity of seeking employment and/or higher income.

Percent of Personal Income from Nonwork Sources -- Availability of income from nonwork sources would be a basic offset to other need variables, permitting persons to stay out of the labor force. Unfortunately, data are not broken down in a manner permitting identification of the labor force status of the recipients of work and nonwork income, or of even estimating the average per recipient. Property certainly is an important source of nonwork income--and the receipt of such income does not necessitate a particular labor force status. Nevertheless, casual empiricism suggests that in the Ozarks the idle poor exceed the idle rich. If this is so, then it is reasonable to hypothesize that an area characterized by relatively heavy reliance on nonwork income sources would exhibit low labor force participation rates.

This variable was derived for each county by summing the total wages and salaries (number of recipients of wages times mean wages and salaries) and self-employment income (number of recipients of self-employment income times mean self-employment income) and dividing this sum by the total amount of all types of income (number of recipients of all types of income times mean income) to obtain the proportion of personal income received from work.[17] This figure was then subtracted from 100 to obtain the percentage of personal income from nonwork sources.

Since this variable is very general, it was decided that specialized need variables dealing with income from nonwork sources should be considered, especially for specific groups of the population. It is clear that Oklahoma counties with relatively low median family income levels have lower standardized labor force participation rates than their counterparts in Arkansas and Missouri. A question immediately arises as to what could explain this difference. It seems reasonable to examine the possibility that state public assistance programs may have had a bearing. Oklahoma's program is by far the most generous. (As a matter of fact it is, on a per capita basis, one of the nation's most generous).

It is difficult to identify a single variable describing variations in state public assistance programs affecting labor force participation rates. Therefore, three different variables were considered.

Old Age Assistance, Recipient Rate -- This variable refers to the number of recipients of old age assistance in a county per 1,000 population aged 65 and over. Therefore, it is applicable only to persons over 65, and it should have a negative relationship to labor force participation rates.

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[17] In the U. S. Census of Population: 1960, General Social and Economic Characteristics series of state reports, county data are presented on "mean income" and "number of recipients" for "all types of income," "wage or salary income," and "self-employment income." Data are not published relative to number of recipients or mean income for income from other (nonwork) sources. With respect to the number of recipients, the classifications are not mutually exclusive, so some recipients could be counted twice in the published figures for wage and salary, and self-employment recipients. On the other hand, the total number of recipients could include some who received no such income from earnings. Thus, the primary usefulness for the "number of recipients" was as a multiplier to be applied to the mean income figure in order to get total income.

Aid to Families with Dependent Children, Recipient Rate -- This variable refers to the number of recipients in a county per 10,000 population aged 18-65. Higher recipient rates in this category should permit those women in certain poverty conditions to avoid participation.

Aid to the Permanently and Totally Disabled, Recipient Rate -- This measures the number of recipients in a county per 10,000 population aged 18-65. Concentrations of relatively large numbers of disabled persons might cause low labor force participation.

Percent of Families with Income Less Than $2,000 -- If a high percentage of the families in a county have an income of less than $2,000, there is reason to believe that extreme poverty conditions are prevalent.[18] Extreme poverty conditions, in which families are verging on the level of subsistence, would lead family members to seek virtually any type of labor force involvement. In other words, it is hypothesized that such extreme poverty conditions acting as a need variable would tend to "push" family members into the labor force.

Opportunity Variables

Opportunity for labor force participation on the part of family members depends on an individual's preparation for work force involvement coupled with economic and social factors associated with the area. Variables were selected to represent such factors as the level of education, racial composition of the population, wage rates, and the existence of employment opportunities in the area.

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[18] Obviously, wealth should also be considered in drawing the poverty line. However, such information is not available on a county-by county basis.

Median Years of School Completed by Males (and Females) 25 Years Old and Over -- These variables are intended to indicate how well a county's population is prepared to enter the work force. It is assumed that participation of family members in the work force would increase with educational attainment. This appears to be the case for at least three reasons:[19] (1) opportunity costs of nonparticipation rise as the level of education increases; (2) the more attractive jobs require a substantial amount of formal education; (3) education may cause individuals to seek social contacts and social interchange that employment outside the home quite frequently provides. For example, the highly educated housewife will find it very difficult to stay at home.

These two variables can be applied to the appropriate sex group, and since the census data restricts this information to those 25 years and over they can only be applied to the appropriate age groups.

Percent of Male (Female) Population 14 Years Old and over Who are Unemployed -- This is one of the most widely used indicators of local labor market conditions.[20] Depending upon the relative importance of the "additional worker" and the "discouragement effects," unemployment may be either directly or inversely related to labor force participation rates. The additional worker effect refers to the possibility that the economic hardship caused by unemployment among heads of households will cause other family members to enter the labor force in an attempt to maintain family living standards. During prolonged periods of unemployment, the discouragement effect relates to the exit from the labor force of persons who have sought work in the past, but have given up the search in the belief that there are no openings. The chronic nature of the Ozarks' low income problem suggests that the discouragement effect is likely to dominate.

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[19] William G. Bowen and T. Aldrich Finegan, "Educational Attainment and Labor Force Participation," American Economic Review, LVI, No. 2 (May, 1966), 567-582.

Percent of Population Nonwhite -- Discrimination influences a nonwhite family's opportunity for market work. The nonwhite female may be more inclined to participate in the labor force than the white female since the nonwhite female can find employment in the service trades where educational requirements have been low. On the other hand, in seeking employment, the nonwhite male faces a problem of discrimination frequently coupled with educational requirements above those which he possesses.

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[20] Jacob Mincer, "Labor Force Participation and Unemployment, a Review of Recent Evidence," in Robert A. Gordon and Margaret S. Gordon, eds., Prosperity and Unemployment (New York: John Wiley & Sons, 1966), pp. 78-79. In reviewing recent studies of determinants of labor force participation rates Mincer points out that the researchers obtained a strong net negative sensitivity of labor force to unemployment. The unemployment rate they used was determined by dividing the number of unemployed (U) by the labor force (L). The dependent variable is the labor force participation rate of a particular population group (L/P). Mincer points out that by using the statistic U/L a "statistical exaggeration of the negative size and significance of the regression coefficients may result from spurious correlation." He goes on to say that, "To the extend . . . that factors other than job opportunities and those listed in the regression create similar differences in (total and component) labor forces across areas they will . . . cause the numerator of the dependent and the denominator of the independent variables to move in the same direction, creating some degree of 'spurious' negative correlation and biasing the negative coefficients toward higher values."

Average Hourly Earnings of Production Workers in Manufacturing Industries -- Economic theory leads to the expectation of a positive relationship between wage rates and labor force participation.[21] However, the value system of our society places the adult male in the role of the primary economic earning agent. It is possible that wage differentials will influence his selection of a vocation or a particular job, but such factors as his health, his family responsibilities and his nonwork income will determine whether or not he chooses to work. Wage levels are more likely to influence the participation rates of females, youths and the aged.[22]

A measure of average wage rates on a county-by-county basis is not available. Therefore, the variable developed in this study probably comes as close to identifying county differentials in wage rates as can be obtained from published data. It was derived by dividing 1958 wages and salaries paid to production workers in a county by relevant man-hours In those cases where wages and salaries were not reported for a county, the lowest figure for a neighboring county was selected. This procedure was based on the assumption that a county had little or no manufacturing if manufacturing wages and salaries were not reported, and that wages tend to be lower in nonmanufacturing than in manufacturing employment.

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[21] Reference, of course, is to the concept of the positively sloped labor supply function. This concept is used with appropriate caution. For example, a recent empirical study reports a strong negative relation between wage rates and hours of work by heads of families. Morgan, op. cit., p. 43.

[22] Orcutt, et al., op. cit., p. 166.

Distance of County Seat from Nearest City of 10,000 Population or Over.-- In an area where employment opportunities in farming have been steadily declining, proximity to growth centers should mean higher participation rates. Of course, if family members have to travel some distance in order to obtain work, this may discourage them from entering the labor force. For example, a mother of small children would be reluctant to commute if the travel time involved causes her to return home in the late evening. Or perhaps teenagers may have to stay at home and care for the smaller children if the mother and father travel long distances to the job. There is also a cost involved in commuting to work which must be considered along with the opportunities in the larger towns.

The investigators use the term "growth center" in the above paragraph with some caution. Cities with populations approaching the 10,000 minimum to be included in this category may not possess sufficient "critical mass" to be viable elements in a pattern of regional growth. They are, however, likely to be sources of current employment opportunity within the context of a 1960 cross-section analysis.

Percent of Residents in 1960 Who Were Living in the County in 1955.-- The lower this ratio, the greater the proportion of a county's 1960 population which had migrated in during the preceding five years. Such inmigration should be a function of employment opportunities and should be associated with higher labor force participation rates. Focus on inmigration rather than outmigration is partially justified by recent empirical work. Economic opportunities appear to have a much more distinct impact on the magnitude and direction of inmigration than on the level of outmigration.[23] Moreover, there is tentative indication that those who migrate constitute a group with a higher labor force participation rate than those who stay put.[24]

Although it might be assumed that net migration rates would provide better indicators of differential economic opportunities, the rural nature of the area led the investigators to discard these as a possible variable. Clearly, net migration rates in the Ozarks region are negative and have high absolute values. The same is true, however, for other rural counties in the surrounding area with relatively high median family income levels and high labor force participation rates. A tentative conclusion is that declining employment opportunities in farming not offset by expansion in other sectors leads to outmigration, and the income and labor force participation characteristics of the remaining populations are largely dependent upon the agricultural resource base, together with the organization and structure of the farm sector.

Index of Relative Rate of Employment Growth.-- This index measures the degree to which a county's total employment change between 1950 and 1960 departs from that which would have occurred if the county had grown at the same rate as the nation as a whole.[25] In a cross section statistical analysis of an area such as the Ozarks whose counties had experienced marked but non-uniform shifts in employment opportunity, it appeared desirable to include a variable which partially indicated the relative intensity of the trend in aggregate county employment opportunity. The variable's specific derivation is described in Appendix E. It is couched such that low values of the index reflect the most adverse shifts in relative employment opportunity; thus, it is hypothesized that participation rates and this index will vary directly.

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[23] Eva Mueller, *Migration Into & Out of Depressed Areas* (Washington: U. S. Department of Commerce, Area Redevelopment Administration, 1964), p. 11; and Ira S. Lowry, *Migration and Metropolitan Growth*: *Two Analytical Models* (San Francisco: Chandler Publishing Company, 1966), p. 22.

[24] Mueller, *op*. *cit*., p. 22.

Measurement Variables

The fourth set of variables do not relate to the family as a decision-making unit concerning labor force participation, but rather to the adequacy of the census definition of "labor force." The investigators identified two measurement variables from published data. They are (1) percent of the population that is rural farm and (2) labor turnover rate.

Percent of Population that is Rural Farm.-- If it is accurate to assert that adult persons living on farms would naturally fall into the census definition of labor force, then negative correlation of this variable with labor force participation rates would indicate some type of measurement problems.

Labor Turnover Rate.-- This variable was obtained by dividing the

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[25] This variable reflects an attempt to incorporate into the model the national growth component of the "shift-shares" approach to examining changes in regional structure. See Harvey S. Perloff, et al., Regions, Resources and Economic Growth (Lincoln: University of Nebraska Press, 1960). Although degree of departure from the national norm is informative, it should be noted that this variable's impact in the regression analyses is the same as would have been obtained by using percentage change in county employment for the 1950-60 period.

1960 census labor force figure into the reported figure for all those working in 1959. The higher this ratio, the more casual is the attachment of persons to the labor force--possibly reflecting a strong seasonal participation pattern. If higher values for this variable are associated with lower labor force participation rates, then the census definition of labor force tends to understate an area's "true" labor force.

Other Variables

It is obvious from the above set of variables that there were some important pieces of information for which data could not be obtained. A discussion of the more important omissions is included in this section.

Family Structure.-- The family structure variables should have included some information on family size as well as the age and sex of the head of the household. The census reports population per household on a county-by-county basis, but there is no way of determining the age distribution of this population. Households with the same number of people but very different age distributions may regard labor force participation quite differently. The census also provides some information regarding heads of households on a county-by-county basis.[26] However, information is not included with respect to the age and sex of the head of the household. In addition, the census data actually cover up the identification of males who are not heads of households. For example, a husband is treated as a household head even though the wife reports herself as being in that category.[27]

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[26] United States Census of Population, 1960, PC (1) Series B, Table 28.

Need.-- The family debt structure should have a very important impact upon the need of family members to participate in the work force.[28] For example, Rosett[29] discovered that debt will increase a wife's participation and personal debt will increase participation more than mortgage debt. The investigators could not find information on personal debt on a county-by-county basis.

Initial Data Manipulation

Prior to explaining the regression procedures and results, it is necessary to discuss three problems exhibited by the data from the Ozark Low-Income Area. First, due to the location of institutions or installations, several of the area's counties have unusual concentrations of persons in (or out of) the labor force due to factors which cannot possibly be attributed to the explanatory variables described above. Therefore, a method for eliminating some of these counties was devised. Second, it was necessary to determine the age breakdown within sex groups to be used in the analyses of participation rates. Finally, it was evident that intercorrelation existed between a number of the nineteen independent variables, and that it was necessary to establish a procedure for eliminating some of these variables from the final regression equations.

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[27] Ibid., p. x. The statement is made that " . . . if a married woman living with her husband was reported as the head, her husband was considered as the head for the purpose of simplifying the tabulations."

[28] Stanley Lebergott, Manpower in Economic Growth: The American Record Since 1800 (New York: McGraw-Hill Book Company, 1964), p. 66.

[29] Richard Rosett, Working Wives: An Econometric Study, Cowles Foundation Discussion Paper No. 35, pp. 46-48.

Reduction in the Number of Observations

A concentration of institutional and/or military population in relatively sparsely populated counties would influence participation rates as well as the explanatory value of the independent variables. Therefore, those counties where such a population was too high relative to the population 14 years of age and older were excluded from the group of final observations.

Fort Leonard Wood, located in Pulaski County, Missouri, is the only large military base in the Ozarks. This county was dropped from the original group of 108 counties.

In order to determine whether a county had a relatively high concentration of institutional and school population, the census figures for total number of inmates were added to the total number of people enrolled in school, and this sum was divided by the total population 14 years of age and older. This figure was then compared to the three-state average of institutional and school population to population 14 years of age and older. After examining the results of these computations, it was decided that if the county ratio was four percentage points or more above the three-state average, this county would be considered as one with an unusually high concentration of institutional and school population and would be dropped from the original set of counties.[30] This procedure resulted in the following twelve counties being omitted from the final group of observations: Arkansas: Faulkner, Logan, Saline, Washington; Missouri: Phelps, St. Francois; Oklahoma: Atoka, Cherokee, Craig, Latimer, Pittsburg, Sequoyah. The result was that 95 rather than 108 observations were included in the final multiple regression analyses.

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[30] Four percentage points was selected as the cut off point because 93 of the 108 counties were within plus or minus three percentage points of the three-state average. Therefore, it appeared that any county that was four percentage points greater than the three-state average did, indeed, represent an unusual concentration of this kind of population.

Age Groups

The analyses of participation rates in the Ozarks have been applied to an age breakdown which is just as fine as is possible on the basis of published census data. Bowen and Finegan, for example, lump males 25 to 54 into a single bracket described as "prime age" males.[31] This procedure may be justified for the metropolitan areas with which they were working. Such a grouping may also make sense on the basis of the assumed appropriate work roles for males. This is not the case for the Ozark area. Simple correlations were computed between participation rates for all of the twelve age-sex categories reported in the 1960 census for the 95-county area (Table 4-1). The coefficients between participation rates for females in the various age brackets were positive and, with only two exceptions, were significant at the 1 percent level. This indicates that where opportunities for female employment existed the females in almost all age brackets show greater participation. No such regular pattern was observed for males, although the values of the coefficients suggest that it might have made more sense to lump the 35 to 44 year old group with the 45 to 64 year olds and to treat the 25 to 34 group separately. It was felt, however, that the safest approach was to

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[31] William G. Bowen and T. A. Finegan, "Labor Force Participation and Unemployment," Employment Policy and the Labor Market, Edited by Arthur M. Ross (Berkeley: University of California Press, 1965), p. 124.

Table 4-1

MATRIX OF SIMPLE CORRELATION COEFFICIENTS BETWEEN PARTICIPATION RATES, TWELVE AGE-SEX CATEGORIES, SELECTED OZARK COUNTIES, 1960

(n = 95)

AGE-SEX CLASS	AGE-SEX CLASS					
	M:14-17	M:18-24	M:25-34	M:35-44	M:45-64	M:65+
M:14-17	1.00000	.20179*	.28645**	.17369	.49148**	.29248**
M:18-24		1.00000	.11307	.31541**	.24680*	.17947
M:25-34			1.00000	-.30570**	.21008*	.22730*
M:35-44				1.00000	.41862**	.30380**
M:45-64					1.00000	.41044**
M:65+						1.00000
	F:14-17	F:18-24	F:25-34	F:35-44	F:45-64	F:65+
F:14-17	1.00000	.51848**	.38889**	.50803**	.47503**	.19352
F:18-24		1.00000	.50248**	.58780**	.46611**	.24757*
F:25-34			1.00000	.52351**	.54232**	.43540**
F:35-44				1.00000	.59591**	.37830**
F:45-64					1.00000	.53611**
F:65+						1.00000

* Significant at the .05 level
** Significant at the .01 level

utilize all six census age classifications (14-17, 18-24, 25-34, 35-44, 45-64, 65 and over).

In addition to the age groups described above, the age-standardized total participation rates for males and females were used in the statistical analyses. The raw participation rates for each sex group were standardized on the basis of the age compositon of the three-state area in which the Ozark region is located. The procedure for standardization is described in Chapter III.

Reduction in the Number of Independent Variables

It was the investigators' original intention to use the nineteen variables discussed in the previous section as independent variables in multiple regression analyses against county labor force participation rates. However, it appeared obvious that some of the independent variables were intercorrelated. When the case is such that not only is the dependent variable related to each of the independent variables, but the independent variables are related to each other in a linear fashion, a problem exists which statisticians call multicollinearity. In such an instance, the multiple regression equation correctly predicts the dependent variable when the effects of changes in all of the independent variables are considered.[32] However, since a multiple regression coefficient can be interpreted only as the average change in one of the independent variables, other independent variables being held constant, it is unrealistic to assume that this can be done if the independent variables are highly correlated.[33] Therefore, since a high degree of intercorrelation between independent variables would reduce the explanatory power of any particular variable, even though a relatively high R^2 value might be obtained, it was imperative that some of the independent variables be omitted from the multiple regression equations.

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[32] Erwin Esser Nemmers, Managerial Economics (New York: John Wiley and Sons, Inc., 1962), p. 34.

[33] R. L. Anderson and T. A. Bancroft, Statistical Theory in Research (New York: McGraw-Hill Book Company, Inc., 1952), p. 202.

The first step in the elimination procedure was to compute simple correlation coefficients between the independent variables in each class of variables. Variables were then eliminated from each class on the basis of the size of the correlation coefficient and intuition of the investigators. Finally, all of the variables selected by this process were brought together in a matrix of correlation coefficients for the purpose of examining the relationship between all classes of the retained variables. On the basis of this examination a final set of independent variables was derived.

Reduction in The Number of Need Variables.-- The correlation coefficients between need variables are presented in Table 4-2. It is evident that the percent of personal income from nonwork sources is related to each of the other need variables. The structural relationship between the percent of personal income from nonwork sources and the recipient rates of old age assistance, aid to families with dependent children, and aid to the disabled is obvious. The relationship between the percent of personal income from nonwork sources and the percent of families with income below $2,000 is positive. This tends to support the proposition that the bulk of the nonwork income in the Ozark area consists of transfer payments. There is a negative relationship between the percent of personal income from nonwork sources and median gross rent. Since a high percentage of personal income from nonwork sources is associated with poverty conditions, it is not surprising that it should

Table 4-2

MATRIX OF CORRELATION COEFFICIENTS BETWEEN NEED VARIABLES
(n = 95)

Variable Number	Description	Variable Number (1)	(2)	(3)	(4)	(5)	(6)
1	Old Age Assistance, Recipient Rate	1.00000	.85172**	.80698**	-.24264*	.46668**	.41603**
2	Aid to Families with Dependent Children, Recipient Rate		1.00000	.82130**	-.15657	.34076**	.51070**
3	Aid to the Disabled, Recipient Rate			1.00000	-.32291**	.45947**	.49360**
4	Median Gross Rent				1.00000	-.70243**	-.48920**
5	Percent of Families with Income Below $2,000					1.00000	.60700**
6	Percent of Personal Income from Nonwork Sources						1.00000

* Significant at the .05 level.

** Significant at the .01 level.

also be related to low median gross rent. The other need variables all appear to be represented by the nonwork income variable. Even though one would expect need to push members of the family into the labor force, the offset of various transfer payment programs may allow some to refrain from participation. Since this possibility poses some very interesting public policy questions, the percent of personal income from the nonwork sources variable was retained and the remainder of the need variables were dropped.

Reduction in the Number of Opportunity Variables.-- Table 4-3 contains a matrix of correlation coefficients between the opportunity variables. The index of relative rate of employment growth (economic growth) variable is related to median school years completed, average hourly earnings and the percent of residents in 1960 who were living in the county in 1955. It is not surprising that a more rapid rate of economic growth is associated with higher levels of education. It also seems reasonable that average hourly earnings in manufacturing will be higher in those counties experiencing more rapid rates of economic growth. The lower the percent of residents in 1960 who were living in the county in 1955, the greater the proportion of a county's population who had migrated in during the preceding five years. The negative relationship between the migration and growth variables suggests inmigration in response to expanding employment opportunities. Therefore, the education, wage, and migration variables were dropped in favor of the index of relative rate of employment growth. Unemployment rates, the percent nonwhite, and distance from nearest growth center exhibit relatively low intercorrelation and therefore were retained as appropriate variables representing opportunity.

Table 4-3

MATRIX OF CORRELATION COEFFICIENTS BETWEEN OPPORTUNITY VARIABLES
(n = 95)

Variable Number	Description	Variable Number								
		(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
7	Median School Years Completed Males 25 Years and Older	1.00000	.93234**	-.10288	.18992	-.06420	.49176**	-.38772**	-.30456**	.58950**
8	Median School Years Completed Females 25 Years and Older		1.00000	-.06287	.17620	.03793	.54935**	-.49524**	-.35397**	.60900**
9	Percent Unemployed Males			1.00000	.45576**	.26650**	.13718	-.17135	.21186*	-.10090
10	Percent Unemployed Females				1.00000	.09245	.18551	-.19692	.10775	.18979
11	Percent Nonwhite					1.00000	.27585**	-.33094**	.34938**	-.15964
12	Average Hourly Earnings						1.00000	-.47675**	-.09034	.42635**
13	Distance from Growth Center							1.00000	.02495	-.33092**
14	Percent of Residents in 1960 Who Were Living in the County in 1955								1.00000	-.46016**
15	Index of Relative Rate of Employment Growth									1.00000

* Significant at the .05 level.
**Significant at the .01 level.

Reduction in the Number of Family Structure Variables -- The coefficients of correlation between the family structure variables are presented in Table 4-4. None of the family structure variables were judged to be highly interrelated.

Final Reduction in the Number of Independent Variables -- The coefficients of correlation between all of the variables retained by the process outlined above are presented in Table 4-5. The percent of population that is rural farm is negatively correlated with unemployment, percent nonwhite, and economic growth variables and positively correlated to the distance from growth center variable--and in each case the coefficients appeared relatively high. Therefore, the percent of the population that is rural farm was omitted from the multiple regression equation and the labor turnover rate was obtained as the measurement variable.

There is a negative relationship between the index of relative rate of employment growth and the percent of personal income from nonwork sources. The coefficient of correlation between these variables is high (-.55465) relative to the others in Table 4-5 and is significant at the 1 percent level. This suggests that one or the other ought to have been culled. Because of the critical role of the income variable as a stand-in for other "need" variables, it appeared that its deletion would be inconsistent with the structural requirements of the basic model of family decision-making. Although it was judged that there were other "opportunity" variables which did not present sufficient intercorrelation to be removed, it seemed that the employment growth variable might be too important to delete, i.e. that it contains information that is probably

Table 4-4

MATRIX OF CORRELATION COEFFICIENTS BETWEEN FAMILY STRUCTURE VARIABLES
(n = 95)

Variable Number	Description	Variable Number (16)	(17)	(18)
16	Women 14-65 With Children Under 6: Ratio of Those With to Those Without Husband Present	1.00000	-.23543*	.18823
17	Percent of Persons 14-17 Enrolled in School		1.00000	-.24411*
18	Percent of Population That Is Rural Farm			1.00000

* Significant at the .05 level.
** Significant at the .01 level.

Table 4-5

MATRIX OF CORRELATION COEFFICIENTS BETWEEN SELECTED INDEPENDENT VARIABLES
(n = 95)

Variable Number	Description	Variable Number									
		(6)	(9)	(10)	(11)	(13)	(15)	(16)	(17)	(18)	(19)
6	Percent of Personal Income from Nonwork Sources	1.00000	.01360	-.21467*	.18158	.37313**	-.55465**	-.19635	-.17558	.15972	-.36583**
9	Percent Unemployed, Males		1.00000	.45516**	.26650**	-.17135	-.10090	-.33222**	-.02787	-.38228**	-.01329
10	Percent Unemployed, Females			1.00000	.09245	-.19692	.18979	-.05434	.04839	-.34632**	-.01207
11	Percent Nonwhite				1.00000	-.33694**	-.15964	-.40072**	.19999*	-.42870**	-.06531
13	Distance from Growth Center					1.00000	-.33092**	.12001	-.22832*	.42245**	-.38679**
15	Index of Relative Rate of Employment Growth						1.00000	.19480	-.02880	-.34156**	.27674**
16	Women 14-65 With Children Under 6: Ratio of Those With to Those Without Husband Present							1.00000	-.23543*	.18823	.13829
17	Percent of Persons 14-17 Enrolled in School								1.00000	-.24411*	.14425
18	Percent of Population That Is Rural Farm									1.00000	-.11485
19	Labor Turnover Rate										1.00000

*Significant at .05 level.
**Significant at .01 level.

different from that of the income variable even though the two are interrelated. The tremendous shifts in total employment and the divergent patterns for men and women described in Chapter II lend weight to this assessment. To be on the safe side both statistically and methodologically, it was determined to obtain one set of regression equations without the employment growth variable, and to include it in a second.[34]

The above procedure resulted in retaining percent nonwhite, percent of persons 14-17 enrolled in school and women 14-65 with children under 6: ratio of those with to those without husband present as family structure variables. The only need variable retained was percent of personal income from nonwork sources. The opportunity variables are percent nonwhite, percent unemployed, distance from the nearest growth center and index of the rate of employment growth.

The Results of Statistical Analyses

In this section the results of the stepwise multiple regression analyses are presented. As indicated above, the independent variables which were used represent a distillation from the original set of nineteen variables which appeared to fit into the model of family decision making relative to labor force participation. The results for each age group for males and females will be presented first with the growth variable excluded, and then with it included.

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[34] Carl F. Christ, Econometric Models and Methods (New York: John Wiley & Sons, Inc.), p. 389. In making the decision to include both variables in one set of multiple regression equations the investigators were influenced by Christ's discussion of the multicollinearity problem. He says, "Presumably there is some critical subjective rate of exchange, so to speak, between the two 'goods,' low correlation among explanatory variables, and inclusion of an explanatory variable if we have some confidence in its relevance, such that if our confidence is greater than the critical rate of exchange specifies, we should include the variable; and if our confidence is less than that, we should exclude it. This 'rate of exchange' of course will depend on the purpose at hand, and perhaps even on the tastes of the decision maker."

A Digression on the Stepwise Multiple Regression Procedure

Suppose a problem involving three independent variables (X_1, X_2, X_3) and one dependent variable (Y) is being considered. The stepwise procedure starts by selecting the independent variable most highly correlated with the dependent variable. Assume that X_3 is the variable selected first. An F value is computed and compared with a preselected level of significance of the appropriate F distribution. If the calculated F is greater than the preselected F value, the variable is entered and the program proceeds to the second step. The next step involves selecting from the remaining independent variables the one with the highest partial correlation coefficient. Assume that this procedure results in X_1 being selected at this stage. An F value is computed to determine whether this variable should be entered. If so, this procedure provides a linear regression equation with two independent variables, i.e., $\hat{Y} = f(X_3, X_1)$. The program now examines the contribution X_3 would have made if X_1 would have been entered first and X_3 entered second. If the computed F value is larger than the preselected value, then X_3 is retained. The program now selects variable X_2 because this is the one most highly correlated with Y given X_1 and X_3. An F test determines whether X_2 should be entered into the equation given X_1 and X_3. At this point F tests for the variables X_1 and X_3 are made to determine if they should remain in the equation. If so, the program terminates and provides the final linear regression equation.

The basic advantage of the stepwise procedure is that the program makes a judgment on the contribution of each independent variable as though it had been the most recent variable entered regardless of its actual point of entry into the model. If a variable does not provide a significant contribution, it is removed from the model. The final print-out provides the independent variables in the order of their importance in explaining the variation in the dependent variable.[35]

Results of Statistical Analyses for Males

The general hypothesis formulated earlier in this report was that variations in labor force participation in the Ozark area can be explained by a set of independent variables which fit into a model of family decision making. This model led to a classification of independent variables under four headings, (1) family structure, (2) need, (3) opportunity, and (4) measurement.

There were six independent variables used to analyze variations in male participation rates for the 14-17 age class. Five independent variables were used in the multiple regression equations for each of the other age classes. The family structure variables are percent nonwhite and percent of persons 14-17 enrolled in school. Obviously, the latter applies only to the age class 14-17. Negative values of the regression coefficients were expected for both of these variables.[36] The percent of personal income from nonwork sources is the only need variable, and it was expected to have a negative relationship with labor force participation rates. Opportunity variables are percent nonwhite, percent unemployed, and distance from the nearest growth center. Once again percent nonwhite was expected to be negatively correlated with labor force participation rates. It was hypothesized that the discouragement effect is dominant in the area and therefore male unemployment rates would be negatively correlated with labor force participation rates. Proximity to growth centers should mean higher participation rates.

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[35] N. R. Draper and H. Smith, Applied Regression Analysis (New York: John Wiley & Sons, Inc.), pp. 171-172.

[36] The reader is referred to a discussion of all nineteen variables presented earlier in the chapter for the reasoning behind the assumed signs of the regression coefficients.

The results of the computer run excluding the growth variable are presented for males in Table 4-6. The signs of the regression coefficients for the standardized male rates are consistent with what was expected. The fact that this set of variables explain some 53 percent of the variation (R^2 = .53281: significant at the .01 level) in standardized male participation rates in the Ozark region is encouraging. The bulk of the variation (about 50 percent) is explained by two variables, percent nonwhite and percent of personal income from nonwork sources (see Appendix F, Table 1.)

The unemployment variable is not statistically significant. In fact, the standard error is almost twice the size of the regression coefficient. Therefore, it is difficult to conclude on the basis of cross section statistical analyses that the discouragement effect is operative in this region. However, in light of the pronounced downward trend in male employment noted in Chapter II, as well as the general decline in male labor force participation rates (see Chapter III), it is difficult to reject the relevance of the discouragement effect. The hypothesis that high unemployment rates cause some of the unemployed to become discouraged and withdraw from the labor force appears to be based

Table 4-6

REGRESSION COEFFICIENTS OF SELECTED VARIABLES ON
PARTICIPATION RATES FOR MALES, SELECTED OZARK COUNTIES, 1960

($\overline{Y}$ = Mean, s.d. = Standard Deviation)

(n = 95)

		REGRESSION COEFFICIENTS					
Age class	R^2	% nonwhite	% of persons 14-17 enrolled in school	% of personal income from nonwork sources	% unemployed males	Distance from growth center	Labor turnover rate
14-17 $\overline{Y}$ = 22.6314 s.d.= 7.0630	.26601**	-.28429**	.03158	-.39733*	-.77971	-.05666	.06569
18-24 $\overline{Y}$ = 76.6093 s.d.= 12.9500	.17674**	-.55358**		-.56045	a	-.00354	.36639
25-34 $\overline{Y}$ = 92.5698 s.d.= 7.4234	.14183**	-.42199**		.14240	a	-.06262	.01482
35-44 $\overline{Y}$ = 91.2789 s.d.= 5.3351	.20622**	.00877		-.48435**	-.14891	.02408	.32111
45-64 $\overline{Y}$ = 81.6485 s.d.= 5.8816	.50288**	-.14641*		-.79812**	.43802	-.01451	.20462
65+ $\overline{Y}$ = 22.7703 s.d.= 5.9572	.22734**	-.13614		-39930**	-1.03418*	-.01146	.10352
Standardized $\overline{Y}$ = 70.1884 s.d.= 4.3467	.53281**	-.22636**		-.46522**	-.12189	-.01788	.18764

*Significant at the .05 level
**Significant at the .01 level

[a] The stepwise procedure dropped this variable for this age class.

on cyclical rather than trend considerations. Perhaps the whole concept of the discouragement effect needs to be reformulated for an area such as the Ozarks. The independent variable, percent of male population 14 years and older who are unemployed, consists of a numerator as well as a denominator which could reflect discouragement from a secular point of view. A prolonged decline in job opportunities could result in both outmigration and the nonmigrating unemployed dropping out of the labor force. Therefore, unemployment rates may not be appropriate for measureing the discouragement effect.[37]

Virtually the same pattern of the signs and significance of the regression coefficients observed for standardized male rates are repeated for the several age classes. The most disappointing result is that very little of the variation, 14 percent, in participation rates for males in the age class 25 to 34 is explained by the selected variables. Practically all of this variation (13.7 percent) is explained by two variables, percent nonwhite and distance from a growth center (see Appendix F, Table 1). The regression coefficient for the percent nonwhite has a negative sign and is statistically significant at the one percent level. Even though the distance from growth center variable is not statistically significant, it comes closer to being so for this age class than for any of the other age classes. In fact, this variable is very close to being statistically significant at the 5 percent level for males 25 to 34. Therefore, there is some evidence that prime age males in the area are willing to go to the job if there is one available nearby. These results lead to the conclusion that in order to increase participation rates of prime age males, policy should be oriented toward increasing the participation of nonwhites and strengthening the economic base of growth centers within the region.

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[37] There appear to be a number of methodological ramifications involved in measuring the discouragement effect in an area such as the Ozarks. For example, declining labor force participation rates (standardized for age and sex) do not necessarily mean that the discouragement effect is operating within the area. Starting from full employment, if there were a long term decline in employment opportunities this may initially cause a jump in unemployment rates due to frictional factors. However, if the decline in employment opportunities is associated with outmigration of the unemployed, over the longer period of time, this could place an upward limit on unemployment rates in the area even though labor force participation rates decline.

The percent nonwhite explains a larger amount of the variation in labor force participation rates for the age classes 14 through 34 than for the older age classes (Appendix F, Table 1). One possible explanation of this is that the younger nonwhites are competing for jobs typically held by whites, and discrimination is an important factor. On the other hand, as a family structure variable, the results might support a hypothesis that the value system held by nonwhite families involves less of a stimulus on the part of prime age males for participation than is the case for whites.

The fact that the measurement variable, labor turnover rate, does not appear significant in any age class implies that intercounty variations in male labor force participation rates are not biased by variations in the casualness with which a county's male population is attached to the labor force.

Results of Statistical Analyses for Females

Essentially the same group of variables used in analyzing variations in male participation rates were used against female participation rates, with the exception that female unemployment rates replaces male unemployment rates, and the variable "women 14 to 65 with children under six:

Table 4-7

REGRESSION COEFFICIENTS OF SELECTED VARIABLES ON PARTICIPATION RATES FOR FEMALES, SELECTED OZARK COUNTIES, 1960

($\overline{Y}$ = mean; s.d. = Standard Deviation)
(n = 95)

Age class	R^2	REGRESSION COEFFICIENTS Women 14-65 with children under 6: ratio of those with to those without husband present	% nonwhite	% of persons 14-17 enrolled in school	% of personal income from nonwork sources	% unemployed females	Distance from growth center	Labor turnover rate
14-17 $\overline{Y}$ = 8.8926 s.d.= 4.4651	.19156	.16946**	-.07126	.00740	-.13434	.86226	-.03074	-.08682
18-24 $\overline{Y}$ = 31.7768 s.d.= 9.5369	.38595**	.28646*	-.22529		-.60930**	4.47733**	-.03028	.23508
25-34 $\overline{Y}$ = 29.1200 s.d.= 6.5774	.20921**	-.00614	-.22238*		-.05715	3.68890**	-.03775	.08636
35-44 $\overline{Y}$ = 34.2271 s.d.= 7.0478	.30748 **	.12620	.01141		-.51592**	2.86937**	-.03892	.06671
45-64 $\overline{Y}$ = 30.2469 s.d.= 6.7317	.32133**	-.06976	-.17073		-.43722**	.74855	-.08106**	.15605
65+ $\overline{Y}$ = 5.8500 s.d.= 2 3165	.14432*		-.05801		-.05259	.08874	-.02396*	.04532
Standardized $\overline{Y}$ = 25.1947 s.d.= 4.8635	.39270**	.04377	-.12904*		-.32432**	1.92691**	-.04726*	.10186

*Significant at the .05 level
**Significant at the .01 level

ratio of those with to those without husband present" was added to the set of family structure variables for the appropriate age groups. It was expected that this variable would vary inversely with female participation rates. Since female rather than total unemployment rates were used as an independent variable, it was expected that this variable would also vary inversely with female participation rates. The other variables were expected to be related to female participation rates in the same manner as they were for male rates, for the reasons set out above.

The results of the computer run excluding the growth variable are presented for females in Table 4-7. An examination of the standardized female category reveals that the regression coefficients for three of the variables, percent nonwhite, percent of personal income from nonwork sources, and distance from a growth center exhibit the signs which were hypothesized, and these variables are statistically significant. However, it should be noted that percent nonwhite does not appear to be as important in explaining variations in female participation rates as it is in explaining variations in male participation rates (see Appendix I). Perhaps this can be explained in terms of the traditional role of the nonwhite female in the service trades or perhaps the nonwhite females have a greater tendency to take on the role of household head.

Female unemployment rates vary directly with female participation rates, and in four of the seven age classes the variable is statistically significant at the 1 percent level. Since there is a positive simple correlation (.45576) between male and female unemployment rates, this may suggest the possibility that for females the additional worker rather than the discouragement effect is operating. It may also simply be a reflection of the fact that where job opportunities for women are greater and female participation rates are higher, there is a tendency for relatively more women to be looking for work.

In those age classes (14-17 and 18-24) where the variable, "women 14 to 65 with children under six: ratio of those with to those without husband present," is statistically significant, the regression coefficient takes on a positive rather than the expected negative sign. This may reflect the fact that need outweighs the traditional role of the female in a family with small children present. If there is no husband present, the public assistance programs may provide a way for the female with small children to stay at home. On the other hand, if the husband is present, the family will not qualify for aid to families with dependent children, and the female may then be pushed into the labor force.

The distance from a growth center variable is statistically significant for females in age classes above 45 years of age. Typically, women older than 45 years of age do not have small children at home, and it is reasonable to assume that they would be more willing to commute to a job nearby than the younger females who have greater family responsibilities.

Once again, the measurement variable, labor turnover rate, was not statistically significant. This implies that female labor force participation rates are not biased by variations in the casualness with which a county's female population is attached to the labor force.

Results of Including the Index of Relative Rate of Employment Growth

The results of the regression analyses including the variable index of relative rate of employment growth (growth index) are presented for males and females in Tables 4-8 and 4-9. As was noted earlier, the

Table 4-8

REGRESSION COEFFICIENTS OF SELECTED VARIABLES ON PARTICIPATION RATES FOR MALES, GROWTH VARIABLE INCLUDED, SELECTED OZARK COUNTIES, 1960

($\overline{Y}$ = Mean, s.d. = Standard Deviation)
(n = 95)

		REGRESSION COEFFICIENTS						
Age class	R^2	% nonwhite	% of persons 14-17 enrolled in school	% of personal income from nonwork sources	% unemployed males	Distance from growth center	Index of relative rate of employment growth	Labor turnover rate
14-17 $\overline{Y}$ = 22.6314 s.d.= 7.0630	.30792**	-.26197*	.06897	-.19744	-.62563	-.04156	.01998*	.04775
18-24 $\overline{Y}$ = 76.6095 s.d.= 12.9500	.28655**	-.46298		a	.38829	.03790	.05851**	.33227
25-34 $\overline{Y}$ = 92.5698 s.d.= 7.4234	.23711**	-.37230**		.43811*	.19311	-.04024	.03115**	a
35-44 $\overline{Y}$ = 91.2789 s.d.= 5.3351	.21624**	.02015		-.41557**	-.10050	.02927	.00726	.31669
45-64 $\overline{Y}$ = 81.6485 s.d.= 5.8816	.50525**	-.14032		-.76128**	.46395	-.01173	.00389	.20226
65+ $\overline{Y}$ = 22.7703 s.d.= 5.9572	.23026**	-.14300		-.44082*	-1.06340*	-.01460	-.00438	.10619
Standardized $\overline{Y}$ = 70.1884 s.d.= 4.3467	.60623**	-.20128**		-.31356**	-.01516	-.00643	.01601**	.17789

*Significant at the .05 level
**Significant at the .01 level

[a] The stepwise procedure dropped this variable from this age class.

Table 4-9

REGRESSION COEFFICIENT OF SELECTED VARIABLES ON PARTICIPATION RATES FOR FEMALES, GROWTH VARIABLE INCLUDED, SELECTED OZARK COUNTIES, 1960

($\bar{Y}$ = Mean; s.d. = Standard Deviation
(n = 95)

		REGRESSION COEFFICIENTS							
Age class	R^2	Women 14-65 with children under 6: ratio of those with to those without husband present	% nonwhite	% of persons 14-17 enrolled in school	% of personal income from nonwork sources	% unemployed females	Distance from growth center	Index of relative rate of employment growth	Labor turnover rate
14-17 $\bar{Y}$ = 8.8926 s.d.= 4.4651	.35594**	.15131*	-.03823	.04627	.09932	.58910	-.01348	.02493**	-.11433
18-24 $\bar{Y}$ =31.7768 s.d.= 9.5369	.43183**	.43183**	-.18235		-.36350	4.15765**	-.01160	.02783**	.21344
25-34 $\bar{Y}$ =29.1200 s.d.= 6.5774	.24896**	-.02541	-.19482		.10064	3.48369**	-.02575	.01797*	.07247
35-44 $\bar{Y}$ =34.2271 s.d.= 7.0478	.41149**	.09280	.05919		-.24243	2.51369*	-.01814	.03097**	.04263
45-64 $\bar{Y}$ =30.2469 s.d.= 6.7317	.48532**	-.10982	-.11342		-.10922	.32197	-.05614*	.03714**	.12717
65+ $\bar{Y}$ = 5.8500 s.d.= 2.3165	.20618**		-.04300		.01342	[a]	-.01994	.00791**	.03723
Standardized $\bar{Y}$ =25.1947 s.d.= 4.8635	.54835**	.01557	-.08870		-.09345	1.62665**	-.02972	.02614**	.03154

*Significant at the .05 level
**Significant at the .01 level

[a] The stepwise procedure dropped this variable from this age class.

growth index and percent of personal income from nonwork sources are relatively highly intercorrelated, and for this reason it is difficult to infer a great deal from the introduction of this new variable into the regression equations. Nevertheless, it is important that the growth variable has a different impact on the multiple correlation coefficients for males and females. By including the growth index, the coefficient of determination (R^2) for standardized female rates increases from .39270 to .54836 (Appendix F, Table 2). On the other hand, inclusion of the growth index only results in an increase in the coefficient of determination for male standardized rates from .53281 to .60623 (Appendix F, Table 1). The reason that the growth index appears to be a more important variable for females than for males is related to the fact that during the 1950's the labor market demand conditions in the area were vastly more favorable for females than was the case for males (Chapter II).

The growth index is positively correlated with female participation rates and statistically significant for each age class. This is not only a result of the trend in expansion of female employment opportunities in the Ozark area but it also reflects the observed intercounty differences in these opportunities. The growth index is positively correlated with male participation rates and significant at the 1 percent level for the age groups 18 to 24 and 25 to 34. It should be noted that the introduction of the growth variable causes the nonwork income variable to lose its significance for females. However, this is not the case for males.

Summary

There appears to be increasing support for considering the family as the decision-making unit regarding labor force participation. Therefore, a crude model was developed in which the key factors affecting labor force participation were classified as need variables, opportunity variables, and family structure variables. The family or household was assumed to be the basic decision-making unit. A fourth set, referred to as measurement variables, relates to the adequacy of the census definition of "labor force." On the basis of census and other published data, the investigators arrived at a set of nineteen variables which fit into the model. Since some of the independent variables were obviously intercorrelated, the final set of variables used in the regression equations represented a distillation of the original set of nineteen. The data were then analyzed using a stepwise multiple regression program.

The stepwise procedure reveals that two variables, percent of personal income from nonwork sources and percent nonwhite account for about 50 percent of the variation in standardized male participation rates. The percent of personal income from nonwork sources is entered as the first variable in each age category except two. Of those two exceptions, it is entered second in one and third in the other. The data do not reveal whether percent nonwhite is acting as a family structure variable, or an opportunity variable, or both.[38] The importance of the personal income from nonwork sources variable cannot be ignored. However, the significance of this variable is difficult to interpret. It should be remembered that the nonwork income variable is used to represent several other need variables, i.e., median gross rent (cost of living), income distribution, and recipient rates for relevant public assistance programs. Due to the intercorrelation between need variables, it is impossible to include them all in the regression equation and determine the separate influence that each has on participation rates.

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[38] The investigators are aware of the fact that there are a number of counties where the percentage of the population who are nonwhite is so small that if these counties were grouped together the variation in the percentage nonwhite could not possibly explain intercounty variation in labor force participation rates.

Female unemployment rates vary directly with female participation rates, and for the most part the regression coefficients are statistically significant. As was pointed out, this could be consistent with the additional worker effect, or it could be merely a reflection of relatively greater labor market involvement by women where there were more women at work.

By introducing the growth index, the multiple correlation coefficients for both sexes are increased, but for females the increase is greater. This is partially a result, exhibited at a point in time, of the area trend for labor demand conditions to be less favorable for men than for women.

The selected variables account for more of the variation in age-standardized participation rates than for participation rates for specific age groups. This is probably because it is generally impossible to develop more specific variables that fit into the family decision making model for each of the age groups.

CHAPTER V

SELECTED MANPOWER-RELATED DEVELOPMENTS IN THE OZARKS SINCE 1960

Most of the programs evolving from the manpower revolution of the 1960's have had some direct impact in the Ozark Low-Income Area. Manpower programs applicable to the area necessarily operate within another loosely coordinated set of policy programs aimed at the broadest aspects of regional economic development. There is such a plethora of programs that no attempt is made here to catalog them all, or even to discuss a major portion. Nor is it possible to get a relatively good fix on county labor force and employment patterns such as that presented in the 1960 Census of Population. The purpose of this chapter, however, is to review briefly some limited information on employment patterns in the area since 1960, to take a glance at the official emergence of the region for policy planning purposes similar to Appalachia, and to note some recent research on the area's human resources which will add further dimensions to the correlation work presented in the preceding chapter.

Recent Employment Developments

Although there is reason for optimism about the area's future growth, particularly as the Arkansas River navigation project is completed, recent information indicates that there has not been a rapid spurt of economic development in the area as a whole during the first

Table 5-1

EMPLOYMENT REPORTED IN COUNTY BUSINESS PATTERNS, OZARK LOW-INCOME AREA STATE ECONOMIC AREAS, MID-MARCH, 1959, 1962 AND 1965

	Number of Employees		
	1959	1962	1965
Arkansas:			
SEA 1	15,412	17,882	22,558
SEA 2	29,082	32,028	37,103
SEA 3	12,739	15,662	16,671
SEA 4	24,938	26,130	28,463
SEA 9	7,991	9,741	11,300
Total, Arkansas portion	90,162	101,443	116,095
Missouri:			
SEA 4	31,341	30,294	32,596
SEA 5	18,054	16,060	19,163
SEA 7[a]	11,496	11,840	12,598
SEA 8	13,698	12,258	13,023
Total, Missouri portion	74,589	70,452	77,380
Oklahoma:			
SEA 3	23,099	23,584	25,479
SEA 6	11,096	11,243	12,068
SEA 7	20,621	21,161	23,626
SEA 8	19,333	18,790	19,167
SEA 9	10,011	9,657	10,688
SEA 10	2,025	2,158	2,768
Total, Oklahoma portion	86,185	86,593	93,796
Total for area	250,936	258,488	287,271

[a] Excludes Polk County

Source: U. S., Bureau of the Census, County Business Patterns, issues for 1959, 1962 and 1965.

half of the decade of the 1960's. Table 5-1 presents data on employment for 1959, 1963, and 1965 by state economic areas (see Figure 2-1) derived from County Business Patterns. These figures do not include 100 percent of employment because they are based on reports of collections under the Federal Insurance Contributions Act (the Social Security Program). They do, however, represent a fairly good source of information on trends, particularly in non-agricultural employment, because there have been no significant changes in the coverage requirements between 1959 and 1965.[1] Table 5-1 indicates that within the entire 108-county Ozark Low-Income Area which is the focal point of this study, non-agricultural employment rose by about 14.5 percent between 1959 and 1965. This rate of expansion is virtually the same as that experienced in non-agricultural establishments for the nation as a whole. Thus it is possible that, net of the agricultural sector, the region's rate of employment expansion in the early 60's was neither booming nor lagging when judged by a national norm. If this is a valid conclusion, then it must be noted that the area's ability to keep pace with the national rate is due entirely to the above-average employment expansion in the Arkansas portion. The County Business Patterns data report that the 1959-65 increase in employment in the Arkansas portion of the Ozark Low-Income Area was 28.8

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[1] The adequacy of County Business Patterns' data as indicators of trend changes in employment can be judged by examining total state employment reported from that source as a percent of estimates of total number of employees on payrolls of non-agricultural establishments from the Manpower Report of the President, 1967 (p. 257). In Arkansas, total state employment reported in County Business Patterns was 70 percent of estimated non-agricultural employment in 1959, 72 percent in 1962, and 73 percent in 1965. Corresponding figures for Missouri are 79, 79, and 80; and for Oklahoma, 76, 72, and 73. Thus the County Business Patterns data appear to be covering a relatively constant share of total employment for the years in Table 5-1.

percent--more than quadruple the rate of change for the combined portions in Oklahoma and Missouri.

The area's economic plight would certainly be much worse without this expansion in non-agricultural employment. It must be remembered, however, that such an expansion per se does not automatically remedy a low-income problem. In a survey undertaken in the region in late 1966, 43 percent of a sample of rural families reported 1965 family income of less than $3,000.[2]

The Ozarks: An Official Area for Economic Development

After the beginning of the Appalachia effort, it is not surprising that political pressures developed to involve the federal government in a similar regional development program in the Ozarks. The Ozarks Regional Commission, consisting of the governors of Missouri, Arkansas, and Oklahoma, and a federal co-chairman, was the first of such commissions formed under the provisions of the 1965 Public Works and Economic Development Act.[3] Congressional representatives from the three states involved immediately suggested to the President that a five-year, 691 million dollar economic development program be undertaken in the region. By early in 1967 a staff had been established with offices in Washington and Little Rock.

In mid-1967, the efforts of the Ozarks Regional Commission and its related staff in the Department of Commerce were still modest in scope and had been aimed primarily at planning activities. Many feel that it is highly desirable that a great deal of federal funds were not dumped in the Commission's lap before sufficient time had elapsed for the three states to coordinate development plans and programs for the region.

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[2] See discussion of Ozark Economic Development Study, infra.

[3] A small portion of southeastern Kansas was added to the official area in 1967. Hence the Commission now includes the governor of that state.

Whether the Ozarks Regional Commission will emerge as a key manpower planning and coordinating agency remains to be seen. However, its very existence, together with the newly formed multi-county economic development districts in the area, implies a great need for viewing all problems of human resource development and utilization in the region within the context of broader economic development policies. The fact that the Commission is currently participating in the financing of a study of the area's adult vocational education needs attests to initial concern over the importance of human resource development. It is anticipated that the cessation of hostilities in Southeast Asia would permit considerable expansion of federal funds flowing through this regional development organization. No doubt an appropriate number of highways and miscellaneous public works projects would be undertaken. However, there are indications that programs might be heavily weighted toward the broad spectrum of the area's educational problems.

Current Research in the Area's Human Resources

Although several research projects recently completed or currently underway dealing with various dimensions of human resources in the Ozark Low-Income Area promise to shed additional light on the extent and causes of human resource underutilization,[4] one deserves particular mention.

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[4] An annotated bibliography entitled "An Evaluation of Publications and Research Efforts Relative to the Ozarks Region" was prepared during 1966 for the U. S. Department of Commerce, Office of Regional Economic

The "Ozark Economic Development Study" surveys various relevant characteristics of rural households. It was undertaken by a team of investigators at the Universities of Arkansas and Missouri during the 1966-67

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[4] (Continued) Development, by Ozarks Unlimited, Inc. (a consortium for research purposes consisting of the University of Missouri, the University of Arkansas, the University of Oklahoma, and Oklahoma State University). A large number of research projects relative to the area's human resources are reviewed in sections on "human resources and regional development" and "education."

A good overview of the region and its problems may be found in Max F. Jordan and Lloyd D. Bender, An Economic Survey of the Ozark Region, U. S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 97, 1966.

A recently completed study of high school senior boys in Sevier and Little River Counties, Arkansas, shows that occupational aspiration levels are similar to those found among children of higher income families in the much more industrialized state of Michigan. This implies that the rural youth of the Ozarks possess sufficient motivation to be receptive to improved educational efforts. However, students' capabilities fell far short of their aspirations--a fact which can be attributed to the inferior quality of formal education in the area. It was also discovered that the occupational pattern of aspirations bore little resemblance to projected demands for labor in the 1970's and that apparently high school counseling was somewhat unrealistic. See Max F. Jordan, James F. Golden, and Lloyd D. Bender, Aspirations and Capabilities of Rural Youth in Relation to Present and Projected Labor Market Requirements (Fayetteville, Arkansas: Agricultural Experiment Station, University of Arkansas Division of Agriculture, Bulletin 722, May, 1967).

Additional information on the role which education plays in the Ozarks' economic development should result from work which will be undertaken beginning in 1967 by Dr. Luther Tweeten (Oklahoma State University, Department of Agricultural Economics) under a grant from the National Science Foundation.

The Economic Development Administration of the U. S. Department of Commerce has contracted with the Behavioral Science Center, Cambridge, Massachusetts, to implement and evaluate a program of achievement motivation training in an Oklahoma Ozark community (probably McAlester in Pittsburg County). The aim will be to experiment with a program similar in conception to that used by David C. McClelland and his associates for the same purposes in India. The Oklahoma Economic Development Foundation (Norman) will be the local cooperating agency. It is anticipated that this project will get underway in the fall of 1967.

academic year. Work was financed by the Office of Economic Opportunity through the Economic Research Service of the U. S. Department of Agriculture. Principal investigators are Dr. Rex Campbell, Department of Sociology (Missouri); Dr. Bernal Green, Agricultural Economist, Economic Research Service (Arkansas); and Mr. Herbert Hoover, Agricultural Economist, Economic Research Service (Missouri).

The interview schedule used in the Ozark Economic Development Study (Budget Bureau #40-6682) is twenty-eight pages long and deals with the following set of main topics: household composition, information about children of the family at home, migration of children, personal characteristics of head and spouse, work history of household head and spouse, migration and employment of head and spouse, social participation, attitudes, health information, housing, specific information about the farm (applicable only to farm residents), and financial information about the head of the household and the family as a whole. Slightly over 1,400 questionnaires were obtained from a stratified cluster sample of households in a 125-county area identical to that originally designated as relevant to the activities of the Ozarks Regional Commission. No households in cities or towns with over 2,500 residents were included in the sample.

Questions in the interview schedule dealing with employment and unemployment do not follow the format used in either the decennial census or the Current Population Survey schedules. Thus the results will not permit a ready identification of those not in the labor force in the sense used in current statistics. Nevertheless, a series of questions were asked probing the individual's attitude toward new employment situations requiring either relocating or commuting, and examining activities undertaken by those not at work relative to finding a job. Questions were also asked concerning respondents' willingness to engage in training programs. It will be possible to cross-classify the responses to such questions with numerous other economic and social characteristics of the family.

Because of the tremendous rural-urban shift which has occurred in the Ozarks, it might be desirable to apply an interview schedule very much similar to that described above to a sample of households in towns with 2,500 or more residents. Given the thoroughness of the questionnaire, however, it is doubtful that a general survey of the economic, social, and cultural characteristics of rural poverty in the area would be of use within the next two or three years.

Summary

Selected instances of employment growth in the Ozark Low-Income Area during the 1960's give reasons for optimism. Yet, there is little doubt that the region continues to be one whose economic performance is lagging considerably behind that of the nation. Given the continued prevalence of poverty, county labor force participation rates generated in the 1970 census of population may well show a continued decline for males. There is, however, the possibility that vast sums of federal redevelopment expenditures will be channeled into the area through the emerging framework of the Ozarks Regional Commission. Such a growth of expenditures is, of course, partially contingent on a contraction in the nation's requirements for military expenditures.

A recently completed survey of human resource characteristics of the area's rural residents promises to shed considerable light on the correlates of rural poverty. This will fill an important part of the informational void with which the instant investigators had planned to deal in a second phase of their study of labor force participation rates.

CHAPTER VI

CONCLUSION

Labor force participation rates are one of the measurable dimensions which describe the Ozark economy. This study has shown that participation rates are a key tool for analyzing the area's poverty problem, because nonparticipation is clearly an important correlate of low personal income. If the newly emerging coordinated policy toward the region's development proves successful, it is probable that this success will be associated with increasing labor force participation rates. Thus an understanding of the processes at work causing intercounty variations in participation rates is an important element in designing and evaluating manpower policies for regional growth. This study represents a contribution to this understanding.

The pattern of county participation rates, published in the 1960 Census of Population and analyzed extensively with statistical tools in Chapter IV, is in fact largely derivative from an economic process which has been at work in the region for several decades. The primary feature of this process is declining employment opportunity in the farming sector which is not offset by expanding labor demand in other sectors within the area. This is a process which, of course, is ubiquitous in rural America. However, it has created greater stress in the Ozarks than has been the case in areas more adequately endowed with the natural resources necessary for agricultural activity. A precipitous decline in the economically active portion of the area's male population represents a focal point for the impact of this stress. Low male participation rates result from declining agricultural employment, outmigration of more economically vigorous population elements, and the inability of the area's nonagricultural sector to absorb the entire excess supply of male labor. In some counties this has been intensified by the special problems exhibited by racial minorities.

Although consistent with the national trend, the area's increasing female labor force participation rates may also be associated with the stresses of the declining opportunities in farming. It is possible that the same forces which have caused male participation rates to behave in a manner more consistent with that of the "secondary" labor force have pushed women into the labor market, and have created wage patterns which have attracted business firms whose operations permit reliance on a relatively unskilled female work force.

The end result is an area with a very large concentration of persons living in or on the verge of poverty. The deterioration of the quality of life associated with nonparticipation on the part of individuals whose normal role in American society would be that of a labor force participant cannot be overemphasized. The most unfortunate result of all may be the fact that this unhappy situation can be transmitted, and intensified in the transmission, from one generation to the next. This occurs both through the family value system regarding work and response to economic opportunity, and through the public school system which dispenses an educational product that is quantitatively and qualitatively below par.

In spite of this essentially dreary picture, portions of the region's economic structure have exhibited, and continue to exhibit, considerable vigor. Indeed, it is the variation of participation rates among counties within this relatively homogeneous region which suggests that partial solutions to the problem of low labor force participation can be found by attempting to identify causal factors responsible for this variation. Moreover, the broad goals of public policy, as well as specific administrative frameworks, are now oriented toward the basic premise that the area's low-income problem can be solved.

The results of the regression runs, based on the model developed in Chapter IV, suggest tentatively how some of the variables might fit together into a strategy for regional development which would involve increasing labor force participation rates in the Ozark Low-Income Area. It is clear that a positive labor force response is elicited from the opening of employment opportunities. The growth variable was dropped from one of the regression runs only because it was closely related to the nonwork income variable. Thus, reliance on nonwork income in this area--although it appears as a very important determinant of labor force participation rates--should probably be viewed as a "second best" solution to family financial survival when other opportunities are not present. Those railing against the expense of public assistance programs would do well to note that economic growth in such an area is likely to reduce program expense and reap double rewards to government finances. The importance of the availability of opportunity is further emphasized by the fact that even within this relatively homogeneous low-income area the extent of inmigration is greater where economic growth has been more rapid. Moreover, there is a positive labor force response associated with educational levels, a negative response associated with percent nonwhite, and a negative response to distance from growth centers for females.

Obvious categories of public policy with respect to education, discrimination, and highway construction flow from these findings.

Under laboratory conditions, it is often possible to hold all independent variables constant except one in order to identify the effect of that variable on the dependent variable. Unfortunately, the social scientist has little opportunity to utilize such fine laboratory controls. This study is no exception. Relatively high correlation between independent variables led to the omission of several from the final regression analysis. This procedure made it difficult to interpret the final results, since it was not always possible to determine whether the variable retained represented itself or served as a proxy for one or more of the variables omitted. Nevertheless, the multivariant analysis has provided a number of hints concerning the causes of intercounty variations in labor force participation rates. Yet the paucity of strong results has strengthened the conviction that the relatively elaborate conceptual and theoretical frameworks which are necessary for the fruitful organization of data in fields in which many variables are known to be operating cannot be employed readily in the case of secondary analysis of published data.

In light of the knowledge gained from this study, and with the benefit of a more sophisticated model of family decision-making than could be applied with published data, the problem of explaining low labor force participation rates could be approached by conducting a depth study of nonparticipants in that part of the Ozarks in which poverty conditions are at their worst. This would necessarily involve the use of an interview schedule applied on a sample basis. Such a schedule should be developed in consultation with experienced social psychologists and interviewers. It would be important to design the instrument so that it probed the relationship between nonparticipation and the individual's role in the structure of the household. Certain other key features such as education, attitudes toward training, knowledge about job opportunities, mobility, and financial condition should be examined.

Census data disclose that persons not in the labor force generally have lower levels of educational attainment than those who are in the work force. Moreover, it is probable that in an area such as the Ozarks the quality of education is inferior. Therefore, the interview schedule would contain questions concerning the extent and type of vocational and other specialized training as well as the number of school years completed. Subjects could be asked to identify the type of vocational and specialized training received and where they received it.

Unwillingness to train or retrain for some type of job may be an important reason for an individual's nonparticipation in the labor force or inability to obtain a job. An attempt could be made to explore the subject's willingness to take selected relevant types of training in order to provide an insight into levels of economic aspiration.

It is possible that the respondents may not be in the labor force because of a limited knowledge of the labor market. They could be asked to identify the location of the nearest public employment agency and give the approximate date that they last checked with this agency concerning employment. They could also be asked to describe other activities in which they engaged while they were looking for work. Since unpleasant experiences may cause a person not to use particular methods of finding employment, the respondents could be quizzed about such experiences.

Questions could be designed to probe the individual's attitude toward mobility in response to economic opportunity. Unwillingness to move from one town to another, one county to another, or one state to another in order to find work may result in nonparticipation. Reluctance to travel to a job may also be a reason for not being in the labor force. Since some jobs may require that the worker commute, the respondents could be asked how far they would be willing to travel to a job. If they answer that they would not be willing to commute, they could be asked their reasons.

The extent and nature of nonwork income could be examined because of a potential negative impact on labor force participation. Particular interest could be paid to state public assistance receipts because of very strong indication from census and other data suggesting that these payments are negatively correlated with participation.

A sizeable portion of the interview could be designed to assess respondents' values, attitudes, self-concepts, perception of the opportunity structure, etc. Both structured and unstructured items could be included. It is recognized that a person's value system is antecedent to his decisions and acts in general. Nevertheless, the consequences of his decisions and acts, as well as the consequences of events and situations over which he has no control, influence his value system in turn. Therefore, maximum use might be made of probing techniques to determine whether a person is not working because of his attitudes or if he holds his attitudes because he is not working.

Finally, it must be admitted that labor force participation rates are not the only central focus to be used in regional development analysis and policy. It is the authors' opinion, however, that this approach forces the analyst to continually return to the key element of human resource utilization.

APPENDIX A

COUNTIES INCLUDED IN THE OZARK LOW-INCOME AREA

ARKANSAS:

- State Economic Area 1
    - Benton
    - Washington
- State Economic Area 2
    - Crawford
    - Franklin
    - Johnson
    - Logan
    - Pope
    - Sebastian
    - Yell
- State Economic Area 3
    - Conway
    - Faulkner
    - Independence
    - Randolph
    - Sharp
    - White
- State Economic Area 4
    - Garland
    - Hot Spring
    - Montgomery
    - Perry
    - Pike
    - Polk
    - Saline
    - Scott
    - Sevier
- State Economic Area 9
    - Baxter
    - Boone
    - Carroll
    - Cleburne
    - Fulton
    - Izard
    - Madison
    - Marion
    - Newton
    - Searcy
    - Stone
    - Van Buren

MISSOURI:

- State Economic Area 4
    - Barry
    - Jasper
    - Lawrence
    - McDonald
    - Newton
- State Economic Area 5
    - Benton
    - Camden
    - Crawford
    - Hickory
    - Laclede
    - Maries
    - Miller
    - Morgan
    - Phelps
    - Pulaski
    - Washington
- State Economic Area 7
    - Christian
    - Dallas
    - Douglas
    - Howell
    - Ozark
    - Polk
    - Stone
    - Taney
    - Texas
    - Webster
    - Wright
- State Economic Area 8
    - Carter
    - Dent
    - Iron
    - Madison
    - Oregon
    - Reynolds
    - Ripley
    - St. Francois
    - Shannon
    - Wayne

OKLAHOMA:

- State Economic Area 3
    - Craig
    - Mayes
    - Nowata
    - Ottawa
    - Rogers
    - Washington
- State Economic Area 6
    - Coal
    - Hughes
    - Okfuskee
    - Pontotoc
    - Seminole
- State Economic Area 7
    - Bryan
    - Carter
    - Choctaw
    - Jefferson
    - Johnston
    - Love
    - Marshall
    - Murray
    - Stephens
- State Economic Area 8
    - Haskell
    - McIntosh
    - Muskogee
    - Okmulgee
    - Sequoyah
    - Wagoner
- State Economic Area 9
    - Atoka
    - Latimer
    - Le Flore
    - McCurtain
    - Pittsburg
    - Pushmataha
- State Economic Area 10
    - Adair
    - Cherokee
    - Delaware

APPENDIX B

Table 1

POPULATION BY CENSUS YEAR, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI AND OKLAHOMA, 1910-1960

	1910	1920	1930	1940	1950	1960
ARKANSAS						
Baxter	10,389	10,216	9,519	10,281	11,683	9,943
Benton	33,389	36,253	35,253	36,148	38,076	36,272
Boone	14,318	16,098	14,937	15,860	16,260	16,116
Carroll	16,829	17,786	15,820	14,737	13,244	11,284
Cleburne	11,903	12,696	11,373	13,134	11,487	9,059
Conway	22,729	22,578	21,949	21,536	18,137	15,430
Crawford	23,942	25,739	22,549	23,920	22,727	21,318
Faulkner	23,708	27,681	28,381	25,880	25,289	24,303
Franklin	20,638	19,364	15,762	15,683	12,358	10,213
Fulton	12,193	11,182	10,834	10,253	9,187	6,657
Garland	27,271	25,785	36,031	41,664	47,102	46,697
Hot Spring	15,022	17,784	18,105	18,916	22,181	21,893
Independence	24,776	23,976	24,225	25,643	23,488	20,048
Izard	14,561	13,871	12,872	12,834	9,953	6,766
Johnson	19,698	21,062	19,289	18,795	16,138	12,421
Logan	26,350	25,866	24,110	25,967	20,260	15,957
Madison	16,056	14,918	13,334	14,531	11,734	9,068
Marion	10,203	10,154	8,876	9,464	8,609	6,041
Montgomery	12,455	11,112	10,768	8,876	6,680	5,370
Newton	10,612	11,199	10,564	10,881	8,685	5,963
Perry	9,402	9,905	7,695	8,392	5,978	4,927
Pike	12,565	12,397	11,792	11,786	10,032	7,864
Polk	17,216	16,412	14,857	15,832	14,182	11,981
Pope	24,527	27,153	26,547	25,682	23,291	21,177
Randolph	18,987	17,713	16,871	18,319	15,982	12,520

APPENDIX B

Table 1 (Continued)

	1910	1920	1930	1940	1950	1960
ARKANSAS (Continued)						
Saline	16,657	16,781	15,660	19,163	3,816	28,956
Scott	14,302	13,232	11,803	13,300	0,057	7,297
Searcy	14,825	14,590	11,056	11,942	0,424	8,124
Sebastian	52,278	56,739	54,426	62,809	4,202	66,685
Sevier	16,616	18,301	16,364	15,248	2,293	10,156
Sharp	11,688	11,132	10,715	11,497	8,999	6,319
Stone	8,946	8,779	7,993	8,603	7,662	6,294
Van Buren	13,509	13,666	11,962	12,518	9,687	7,228
Washington	33,889	35,468	39,255	41,114	9,979	55,797
White	28,574	34,603	38,269	37,176	38,040	32,745
Yell	26,323	25,655	21,313	20,970	14,057	11,940
MISSOURI						
Barry	23,869	23,473	22,803	23,546	21,755	18,921
Benton	14,881	12,989	11,708	11,142	9,080	8,737
Camden	11,582	10,474	9,142	8,971	7,861	9,116
Carter	5,504	7,482	5,503	6,226	4,777	3,973
Christian	15,832	15,252	13,169	13,538	12,412	12,359
Crawford	13,576	12,355	11,287	12,693	11,615	12,647
Dallas	13,181	12,033	10,541	11,523	10,392	9,314
Dent	13,245	12,318	10,974	11,763	10,936	10,445
Douglas	16,664	15,436	13,959	15,600	12,638	9,653
Hickory	8,741	7,033	6,430	6,506	5,387	4,516
Howell	21,065	21,102	19,672	22,270	22,725	22,027
Iron	8,563	9,458	9,642	10,440	9,458	8,041
Jasper	89,673	75,941	73,810	78,705	79,106	78,863
Laclede	17,363	16,857	16,320	18,718	19,010	18,991
Lawrence	26,583	24,211	23,774	24,637	23,420	23,260
McDonald	13,539	14,690	13,936	15,749	14,144	11,798

APPENDIX B

Table 1 (Continued)

	1910	1920	1930	1940	1950	1960
MISSOURI (Continued)						
Madison	11,273	10,721	9,418	9,656	10,380	9,366
Maries	10,088	9,500	8,368	8,638	7,423	7,282
Miller	16,717	15,567	16,728	14,798	13,734	13,800
Morgan	12,863	12,015	10,968	11,140	10,207	9,476
Newton	27,136	24,886	26,959	29,039	28,240	30,093
Oregon	14,681	12,889	12,220	13,390	11,978	9,845
Ozark	11,926	11,125	9,537	10,766	8,856	6,744
Phelps	15,796	14,941	15,308	17,437	21,504	25,396
Polk	21,561	20,351	17,803	17,400	16,062	13,753
Pulaski	11,438	10,490	10,755	10,775	10,392	46,567
Reynolds	9,592	10,106	8,923	9,370	6,918	5,161
Ripley	13,099	12,061	11,176	12,606	11,414	9,096
St. Francois	35,738	31,403	35,832	35,950	35,276	36,516
Shannon	11,443	11,865	10,894	11,831	8,377	7,087
Stone	11,559	11,941	11,614	11,298	9,748	8,176
Taney	9,134	8,178	8,867	10,323	9,863	10,238
Texas	21,458	20,548	18,580	19,813	18,992	17,758
Washington	13,378	13,803	14,450	17,492	14,689	14,346
Wayne	15,181	13,012	12,243	12,794	10,514	8,638
Webster	17,377	16,609	16,148	17,226	15,072	13,753
Wright	18,315	17,733	16,741	17,967	15,834	14,183
OKLAHOMA						
Adair	10,535	13,703	14,756	15,755	14,918	13,112
Atoka	13,808	20,862	14,533	18,702	14,269	10,352
Bryan	29,854	40,700	32,277	38,138	28,999	24,252
Carter	25,358	40,247	41,419	43,292	36,455	39,044
Cherokee	16,778	19,872	17,470	21,030	18,989	17,762
Choctaw	21,862	32,144	24,142	28,358	20,405	15,637

APPENDIX B

Table 1 (Continued)

	1910	1920	1930	1940	1950	1960
OKLAHOMA (Continued)						
Coal	15,817	18,406	11,521	12,811	8,056	5,546
Craig	17,404	19,160	18,052	21,083	18,263	16,303
Delaware	11,469	13,868	15,370	18,592	14,734	13,198
Haskell	18,875	19,397	16,216	17,324	13,313	9,121
Hughes	24,040	26,045	30,334	29,189	20,664	15,144
Jefferson	17,430	17,664	17,392	15,107	11,122	8,192
Johnston	16,734	20,125	13,082	15,960	10,608	8,517
Latimer	11,321	13,866	11,184	12,380	9,690	7,738
LeFlore	29,127	42,765	42,896	45,866	35,276	29,106
Love	10,236	12,433	9,639	11,433	7,721	5,862
McCurtain	20,681	37,905	34,759	41,318	31,588	25,851
McIntosh	20,961	26,404	24,924	24,097	17,829	12,371
Marshall	11,619	14,674	11,026	12,384	8,177	7,263
Mayes	13,596	16,829	17,883	21,668	19,743	20,073
Murray	12,744	13,115	12,410	13,841	10,775	10,622
Muskogee	52,743	61,710	66,424	65,914	65,573	61,866
Nowata	14,223	15,899	13,611	15,774	12,734	10,848
Okfuskee	19,995	25,051	29,016	26,279	16,948	11,706
Okmulgee	21,115	55,072	56,558	50,101	44,561	36,945
Ottawa	15,713	41,108	38,542	35,849	32,218	28,301
Pittsburg	47,650	52,570	50,778	48,985	41,031	34,360
Pontotoc	24,331	30,949	32,469	39,792	30,875	28,089
Pushmataha	10,118	17,514	14,744	19,466	12,001	9,088
Rogers	17,736	17,605	18,956	21,078	19,532	20,614
Seminole	19,964	23,808	79,621	61,201	40,672	28,066
Sequoyah	25,005	26,786	19,505	23,138	19,773	18,001
Stephens	22,252	24,692	33,069	31,090	34,071	37,990
Wagoner	22,086	21,371	22,428	21,642	16,741	15,673
Washington	17,484	27,002	27,777	30,559	32,880	42,347

APPENDIX C

Table 1

LABOR FORCE PARTICIPATION RATES, MALE AND FEMALE, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI, AND OKLAHOMA, 1940, 1950 AND 1960

State and County	Male 1940	Male 1950	Male 1960	Female 1940	Female 1950	Female 1960
ARKANSAS						
Baxter	80.6	78.0	59.6	10.0	14.1	18.7
Benton	77.7	76.5	70.1	12.2	24.4	29.2
Boone	79.8	80.1	69.0	13.3	21.9	28.8
Carroll	81.4	76.8	70.7	9.2	21.5	27.9
Cleburne	81.9	79.4	65.9	8.8	17.7	15.5
Conway	81.0	76.0	66.4	13.0	22.1	27.2
Crawford	79.6	73.5	68.4	14.4	18.2	25.6
Faulkner	79.7	70.0	68.0	14.7	18.5	31.5
Franklin	78.4	75.9	69.5	11.4	15.8	19.2
Fulton	79.2	79.2	66.9	8.9	11.9	16.3
Garland	70.9	72.3	64.0	28.3	29.5	29.9
Hot Springs	78.4	80.6	63.7	13.1	19.6	25.1
Independence	79.5	74.1	66.9	13.0	13.3	20.8
Izard	80.5	77.5	64.7	7.5	9.0	13.9
Johnson	80.0	70.8	61.3	10.6	15.2	23.0
Logan	80.0	67.9	58.2	11.4	15.2	24.1
Madison	85.2	79.3	72.7	6.7	14.8	31.3
Marion	82.8	76.5	62.4	9.2	11.1	22.7
Montgomery	80.7	70.7	68.0	10.2	7.2	23.3
Newton	84.3	78.4	57.1	7.4	11.3	12.3
Perry	81.0	70.9	61.1	8.8	9.1	18.4
Pike	80.7	73.8	65.2	8.9	10.7	18.0
Polk	81.0	75.8	65.5	12.4	16.5	30.1
Pope	80.2	68.0	66.1	13.1	18.1	30.8
Randolph	81.9	74.9	67.2	9.2	16.7	24.0
Saline	67.8	67.3	61.0	11.9	17.1	22.1

APPENDIX C

Table 1 (Continued)

LABOR FORCE PARTICIPATION RATES, MALE AND FEMALE, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI, AND OKLAHOMA, 1940, 1950 AND 1960

State and County	Male			Female		
	1940	1950	1960	1940	1950	1960
ARKANSAS (Cont.)						
Scott	82.3	75.2	66.9	8.5	11.0	25.7
Searcy	83.0	75.3	67.5	10.8	13.5	22.5
Sebastian	79.6	78.1	75.6	23.0	26.3	32.7
Sevier	80.2	77.1	64.9	12.2	15.9	25.1
Sharp	78.5	73.5	62.4	9.7	13.8	18.8
Stone	86.7	72.2	65.5	8.9	6.2	14.9
Van Buren	82.8	80.8	63.2	7.6	20.1	17.7
Washington	77.5	69.3	67.5	16.0	27.4	33.7
White	79.6	75.6	67.7	12.1	16.6	28.7
Yell	81.5	76.0	66.1	11.8	9.7	23.4
MISSOURI						
Barry	78.3	78.3	67.4	10.1	19.3	24.1
Benton	79.5	78.4	74.4	10.8	15.9	24.0
Camden	78.3	74.1	64.6	12.4	21.0	30.2
Carter	76.1	70.7	59.2	6.8	16.6	18.0
Christian	79.8	77.7	76.5	8.9	21.7	30.2
Crawford	75.7	74.1	65.9	11.7	16.8	25.9
Dallas	75.0	74.7	65.9	8.3	18.9	26.3
Dent	79.0	77.9	66.8	17.1	25.0	27.1
Douglas	79.4	77.9	68.5	9.4	16.7	23.1
Hickory	79.4	82.2	69.4	9.3	31.6	26.8
Howell	77.0	74.0	68.7	16.0	17.3	27.0
Iron	75.0	72.9	63.1	15.9	15.9	22.9
Jasper	76.2	75.7	72.6	23.3	27.8	31.4

APPENDIX C

Table 1 (Continued)

LABOR FORCE PARTICIPATION RATES, MALE AND FEMALE, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI, AND OKLAHOMA, 1940, 1950, AND 1960

State and County	Male			Female		
	1940	1950	1960	1940	1950	1960
MISSOURI (Cont.)						
Laclede	76.7	76.9	69.7	19.0	25.2	29.3
Lawrence	75.3	77.8	69.0	15.5	22.2	29.8
McDonald	75.7	75.0	61.8	10.3	14.7	25.4
Madison	79.3	78.0	66.3	18.5	23.1	25.7
Maries	78.9	82.2	68.4	9.1	13.8	29.0
Miller	79.0	77.4	72.8	13.4	17.6	32.6
Morgan	78.8	76.8	65.4	13.6	19.8	31.4
Newton	75.3	76.6	72.1	14.2	20.4	24.9
Oregon	77.5	74.0	62.8	8.8	13.9	20.7
Ozark	79.7	82.8	68.3	6.3	16.4	26.1
Phelps	75.8	61.7	59.6	22.3	23.6	32.4
Polk	76.8	73.9	69.6	11.3	14.1	29.3
Pulaski	77.0	77.2	95.0	11.1	25.0	24.4
Reynolds	76.5	74.8	59.8	9.7	17.4	18.4
Ripley	79.7	72.3	55.0	11.0	18.5	19.2
St. Francois	71.2	69.7	64.4	17.6	21.2	25.9
Shannon	80.0	70.9	63.0	11.0	9.8	22.8
Stone	80.4	75.4	68.9	8.4	22.8	31.6
Taney	76.1	72.1	67.4	10.7	17.7	27.3
Texas	77.6	78.5	68.8	10.6	27.2	31.5
Washington	79.5	68.2	64.1	10.1	14.0	22.6
Wayne	79.1	76.7	60.4	9.9	16.1	19.3
Webster	79.8	78.6	69.8	11.4	20.5	24.3
Wright	78.6	77.1	65.5	10.9	20.2	26.0

APPENDIX C

Table 1 (Continued)

LABOR FORCE PARTICIPATION RATES, MALE AND FEMALE, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI, AND OKLAHOMA, 1940, 1950, AND 1960

	Male			Female		
State and County	1940	1950	1960	1940	1950	1960
OKLAHOMA						
Adair	71.1	65.3	48.4	8.8	12.1	17.2
Atoka	76.2	68.1	51.9	9.8	15.0	19.4
Bryan	75.8	68.4	67.0	13.8	17.4	24.6
Carter	75.3	74.8	70.9	17.4	21.2	27.6
Cherokee	71.3	58.9	54.5	10.8	13.3	21.3
Choctaw	76.3	68.1	60.1	13.6	15.6	22.2
Coal	79.5	69.3	57.8	12.3	19.3	21.9
Craig	65.3	60.3	56.0	14.1	17.7	25.9
Delaware	75.1	68.8	52.8	9.5	12.6	22.1
Haskell	74.1	70.0	59.2	10.3	13.9	17.3
Hughes	74.6	69.1	61.7	12.7	15.7	25.0
Jefferson	75.7	72.0	60.3	13.7	16.2	20.9
Johnston	75.5	63.2	57.2	10.8	13.8	20.4
Latimer	73.1	60.6	51.3	15.6	14.6	20.4
LeFlore	74.3	66.2	58.2	10.8	13.4	21.2
Love	77.7	75.7	67.5	8.8	13.5	22.3
McCurtain	77.2	67.6	57.5	12.7	14.1	18.6
McIntosh	74.2	67.1	56.1	10.7	13.4	18.9
Marshall	73.0	73.7	66.9	10.7	15.8	26.5
Mayes	74.7	71.9	63.5	12.5	16.2	22.6
Murray	70.5	65.6	65.1	14.7	18.2	23.5
Muskogee	73.1	70.8	66.7	22.4	26.5	30.8
Nowata	76.3	73.9	67.0	14.3	19.4	19.0
Okfuskee	74.7	70.1	57.6	12.2	17.4	17.3
Okmulgee	73.4	68.3	64.9	18.4	20.0	22.4

APPENDIX C

Table 1 (Continued)

LABOR FORCE PARTICIPATION RATES, MALE AND FEMALE, OZARK AND RELATED COUNTIES IN ARKANSAS, MISSOURI, AND OKLAHOMA, 1940, 1950, AND 1960

	Male			Female		
State and County	1940	1950	1960	1940	1950	1960
OKLAHOMA (Cont.)						
Ottawa	75.4	73.0	68.0	19.0	22.7	24.3
Pittsburg	60.1	63.1	55.8	15.3	21.8	28.1
Pontotoc	77.1	72.3	69.8	15.4	21.6	27.4
Pushmataha	76.8	70.4	54.5	11.3	15.5	18.2
Rogers	72.7	71.5	71.0	13.9	20.6	24.7
Seminole	76.0	71.6	67.6	16.0	17.1	25.5
Sequoyah	73.2	64.3	55.9	11.1	15.3	18.6
Stephens	77.9	79.1	77.1	15.6	20.8	27.7
Wagoner	75.4	70.0	65.1	11.3	14.6	19.9
Washington	78.3	82.7	82.3	23.4	29.8	32.1

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APPENDIX D

NOTE ON THE SOURCE AND MEASUREMENT OF LABOR FORCE PARTICIPATION

The county-by-county labor force participation rates used as the dependent variables in the analyses of this report are derived from the _United States Census of Population, 1960_. Population figures for the relevant age groups were derived from state reports entitled _General Population Characteristics_, Table 27, and labor force figures were found in state reports entitled _General Social and Economic Characteristics_, Table 83.

Although earlier censuses of population report labor force information by age and sex groups for metropolitan areas, the 1960 issue was the first presenting this data for all counties. Thus an analysis of the type undertaken in this report could not have been undertaken on the basis of published information prior to the 1960 census.

As in other approaches to the measurement of the labor force, the 1960 definition really applied to the sum of two measured components, the "employed" and the "unemployed." The specific requirements leading a person to be classed as within or without the labor force are based primarily on activities undertaken during the week prior to the time the respondents were interviewed or filled out their mailed questionnaires. The census was taken during the first half of April, so it is clear that seasonal employment factors could have affected participation rates--although it appears doubtful that these could be an important source of intercounty variation within the relatively homogeneous Ozark Low-Income Area.

An individual was classed as "employed" if, during the preceding week, he did any work at all for pay or profit, or if he worked without pay fifteen hours or more in connection with a family enterprise. Individuals were also classified as employed if they were temporarily not at work because of weather, strikes, vacation, illness, or other personal reasons.

While the key definitional concept identifying the "unemployed" applied to job-seeking activity during the week preceding the enumeration, an individual also fell into this class if he had undertaken a specific action seeking employment within the past sixty days.

Thus the main group of individuals classed as "not in the labor force" not only did not work during the week preceding the enumeration, but had not undertaken any activity relative to finding a job within the preceding two months.

The monthly Current Population Survey also contains data on the size of the labor force as it applies to the nation as a whole. It should be noted that the 1960 census definition of labor force was not entirely consistent with that used in the Current Population Survey at that time, particularly with respect to the placement of persons in the labor force who had not actively looked for a job within the preceding week. Unlike the census' sixty day limit, the CPS did not specify a maximum time limit beyond which job-seeking activity would not be sufficient to place an individual in the labor force. Moreover, the census did not include, and the CPS did include, individuals not at work and not looking for work because they did not believe there were appropriate job openings available in their area. It appears that changes in the CPS definitions beginning in January, 1967, may increase consistency with the decennial census definitions. A four week maximum is placed on job-seeking activity in order for a person to be classed as "unemployed" rather than "not in the labor force," and the so-called discouraged workers are no longer included in the labor force. It should also be noted that the present CPS definition of the labor force does not include individuals 14 and 15 years of age.

Because the decennial census questions are applied to such a vast number of respondents, many of whom engage in self-enumeration, it is doubtful that its definitions can ever be honed as sharp as those used by the professional interviewers in the administration of the Current Population Survey.

For further information on the census and Current Population Survey approaches to the measurement of the labor force see President's Committee to Appraise Employment and Unemployment Statistics, Measuring Employment and Unemployment (Washington: U. S. Government Printing Office, 1962); Seymour L. Wolfbein, Employment and Unemployment in the United States (Chicago: Science Research Associates, 1964); Robert L. Stein, "New Definitions for Employment and Unemployment," Employment and Earnings and Monthly Report on the Labor Force, Vol. XIII (February, 1967); and J. E. Morton, Analytic Potential of the Current Population Survey for Manpower and Employment Research (Kalamazoo: The W. E. Upjohn Institute for Employment Research, 1965).

APPENDIX E

SOURCES AND EXPLANATIONS FOR INDEPENDENT VARIABLES

1. Old Age Assistance, Recipient Rate. Source: Public Assistance in the Counties of the United States, June, 1960, pp. 17-20, 90-95, and 125-128. This refers to the number of recipients in a county per 1,000 population aged 65 and over.

2. Aid to the Permanently and Totally Disabled, Recipient Rate. Source: Public Assistance in the Counties of the United States, June, 1960, pp. 17-20, 90-95, and 125-128. This refers to the number of recipients in a county per 10,000 population aged 18-65.

3. Aid to Families with Dependent Children, Recipient Rate. Source: Public Assistance in the Counties of the United States, June, 1960, pp. 17-20, 90-95, and 125-128. This refers to the number of children in a county receiving assistance per 1,000 population under age 18.

4. Median Gross Rent. Source: United States Census of Housing, 1960. Tables 30 and 17.

5. Per Cent of Families with Income Less Than $2,000. Source: United States Census of Population, 1960, PC(1) Series C, Table 86.

6. Per Cent of Personal Income from Nonwork Sources. Source: United States Census of Population, 1960 PC(1) Series C, Table 86. This variable was derived for each county by summing the total wages and salaries (number of recipients of wages x mean wages and salaries) and self-employment income (number of recipients of self-employment income x mean self-employment income) and dividing this sum by the total amount of all types of income (number of recipients of all types of income x mean income) to obtain the proportion of personal income received from work. This figure was then subtracted from 100 to obtain the proportion of personal income from nonwork sources.

7. Median Years of School Completed by Males 25 Years Old and Over. Source: United States Census of Population, 1960, PC(1) Series C, Table 83.

8. Median Years of School Completed by Females 25 Years Old and Over. Source: United States Census of Population, 1960, PC(1) Series C, Table 83.

9. Per Cent of Male Population 14 and Over Unemployed. Source: United States Census of Population, 1960, PC(1) Series C, Table 83.

10. Per Cent of Female Population 14 and Over Unemployed. Source: United States Census of Population, 1960, PC(1) Series C, Table 83. These were derived for each county by dividing the total number of unemployed males (females) by the number of males (females) 14 and over.

11. Per Cent of Population Nonwhite. Source: United States Census of Population, 1960, PC(1) Series B, Table 28. It should be noted that in Oklahoma this figure includes a good many Indians.

12. Average Hourly Earnings of Production Workers in Manufacturing. Source: Census of Manufacturers, 1958, Vol. III, Table 3. This was derived by dividing wages and salaries paid to production workers in a county by man-hours. In those cases where wages and salaries were not reported for a county, we selected the lowest figure for the neighboring counties.

13. Distance of County Seat from Nearest City of 10,000. Sources: Arkansas, Missouri, and Oklahoma Road Maps.

14. Per Cent of Residents in 1960 Who Were Living in the County in 1955. Source: United States Census of Population, 1960, PC(1) Series C, Table 82.

15. Index of Relative Rate of Employment Growth. Source: Growth Patterns in Employment by County, 1940-1950 and 1950-1960, Vol. IV, Table 7, Vol. V, Table 7, and Vol. VI, Table 7. The specific derivation of this variable is as follows:

    E_{50} = Total employment in a county, 1950

    E_{60} = Total employment in a county, 1960

    G = Rate of growth in employment in the United States, for the entire decade, 1950-1960 (.15481)

    P = E_{50} x G, or the predicted change in county employment if it were to have grown at the national rate

    The index of relative employment growth is thus:

$$\frac{E_{60} - E_{50}}{P}$$

16. Women 14-65 with Children Under 6: Ratio of Those With to Those Without Husband Present. Source: United States Census of Population, 1960, PC(1) Series C, Table 83. The specific derivation of this variable in the terms appearing in the source is as follows:

    A = "Female, 14 years old and over; not in labor force; other, under 65 years old; with own children under 6"

    B = "Women in labor force with own children under 6"

    C = Same as "A" above, subcategory "married, husband present."

    D = Same as B above, subcategory "married, husband present."

    A+B thus refers to the number of women in a county with own children under 6, since all women are either in or not in the labor force.

C+D refers to the number of women in a county with own children under 6 whose husbands are present in the family

The variable itself is:

$$\frac{C + D}{(A+B) - (C+D)} = \frac{C+D}{A+B} - 1$$

17. Per Cent of Persons 14-17 Enrolled in School. Sources: United States Census of Population, 1960, PC(1) Series C, Table 83, and United States Census of Population, 1960, PC(1) Series B, Table 27.

18. Per Cent of Population That is Rural Farm. Source: United States Census of Population, 1960, PC(1) Series C, Table 35.

19. Labor Turnover Rate. Sources: United States Census of Population, 1960, PC(1) Series C, Table 86, and United States Census of Population, 1960, PC(1) Series C, Table 83. This was derived by dividing the labor force in a particular county in 1960 by the total number of persons who reported working in 1959.

APPENDIX F

Table 1

SUMMARY OF THE STEPWISE MULTIPLE REGRESSION PROGRAM OF SELECTED VARIABLES
ON PARTICIPATION RATES FOR MALES, SELECTED OZARK COUNTIES, 1960
(n = 95)

Variables Listed In Descending Order of Entry Into Regression Equation
(F level to enter variable = .001)

Without Growth Index			With Growth Index		
Age Class	Variable	R^2	Age Class	Variable	R^2
14-17	% of personal income from nonwork sources	.15603	14-17	Index of relative rate of employment growth	.19172
	% nonwhite	.20836		% nonwhite	.24450
	Distance from growth center	.24244		Distance from growth center	.27617
	% unemployed, males	.26418		% unemployed, males	.29019
	% of persons 14-17 enrolled in school	.26529		% of personal income from nonwork sources	.30272
	Labor turnover rate	.26601		% of persons 14-17 enrolled in school	.30754
				Labor turnover rate	.30793
18-24	% nonwhite	.12115	18-24	Index of relative rate of employment growth	.19987
	% of personal income from nonwork sources	.16864		% nonwhite	.27844
	Labor turnover rate	.17671		Labor turnover rate	.28161
	Distance from growth center	.17674		Distance from growth center	.28516
				% unemployed, males	.28665
25-34	% nonwhite	.10273	25-34	Index of relative rate of employment growth	.12132
	Distance from growth center	.13691		% nonwhite	.19334
	% of personal income from nonwork sources	.14180		% of personal income from nonwork sources	.22028
	Labor turnover rate	.14183		Distance from growth center	.23599
				% unemployed, males	.23711
35-44	% of personal income from nonwork sources	.16928	35-44	% of personal income from nonwork sources	.16928
	Labor turnover rate	.19212		Labor turnover rate	.19212
	Distance from growth center	.20490		Distance from growth center	.20490
	% unemployed, males	.20612		Index of relative rate of employment growth	.21529
	% nonwhite	.20622		% unemployed, males	.21570
				% nonwhite	.21624
45-64	% of personal income from nonwork sources	.45921	45-64	% of personal income from nonwork sources	.45921
	Labor turnover rate	.47454		Labor turnover rate	.47454
	% nonwhite	.48968		% nonwhite	.48968
	% unemployed, males	.50002		% unemployed, males	.50002
	Distance from growth center	.50288		Index of relative rate of employment growth	.50346
				Distance from growth center	.50525
65+	% of personal income from nonwork sources	.12964	65+	% of personal income from nonwork sources	.12964
	% unemployed, males	.20221		% unemployed, males	.20221
	% nonwhite	.22103		% nonwhite	.22103
	Labor turnover rate	.22560		Labor turnover rate	.22560
	Distance from growth center	.22734		Index of relative rate of employment growth	.22756
				Distance from growth center	.23027
Standardized	% of personal income fr sources	.38471	Standardized	% of personal income from nonwork sources	.38471
	% nonwhite	.49743		% nonwhite	.49743
	Labor turnover rate	.52408		Index of relative rate of employment growth	.58690
	Distance from growth center	.53150		Labor turnover rate	.60524
	% unemployed males	.53281		Distance from growth center	.60620
				% unemployed, males	.60623

APPENDIX F

Table 2

SUMMARY OF THE STEPWISE MULTIPLE REGRESSION PROGRAM OF SELECTED VARIABLES
ON PARTICIPATION RATES FOR FEMALES, SELECTED OZARK COUNTIES, 1960
(n = 95

Variables Listed in Descending Order of Entry into Regression Equation
(F level to enter variable = .001)

Without Growth Index			With Growth Index		
Age Class	Variable	R^2	Age Class	Variable	R^2
14-17	Women 14-65 with children under 6: ratio of those with to those without husband present	.10128	14-17	Index of relative rate of employment growth	.28657
	% of personal income from nonwork sources	.15113		Women 14-65 with children under 6: ratio of those with to those without husband present	.33415
	% unemployed, females	.16788		% unemployed, females	.34060
	Distance from growth center	.18051		Labor turnover rate	34428
	% nonwhite	.18854		% of persons 14-17 enrolled in school	.34810
	Labor turnover rate	.19152		% of personal income from nonwork sources	35114
	% of persons 14-17 enrolled in school	.19166		Distance from growth center	.35336
				% nonwhite	.35594
18-24	% of personal income from nonwork sources	.22404	18-24	Index of relative rate of employment growth	.25168
	Women 14-65 with children under 6: ratio of those with to those without husband present	.28493		% unemployed, females	.31263
	% unemployed, females	.35567		Women 14-65 with children under 6: ratio of those with to those without husband present	.38359
	% nonwhite	.37136		% of personal income from nonwork sources	.41313
	Labor turnover rate	.38127		% nonwhite	.42531
	Distance from growth center	.38595		Labor turnover rate	.43118
				Distance from growth center	.43183
25-34	% unemployed, females	.13252	25-34	% unemployed, females	.13252
	% nonwhite	.17315		Index of relative rate of employment growth	.21381
	Distance from growth center	.20626		% nonwhite	.23705
	Labor turnover rate	.20826		Distance from growth center	.24517
	% of personal income from nonwork sources	.20916		% of personal income from nonwork sources	.24742
	Women 14-65 with children under 6: ratio of those with to those without husband present	.20921		Labor turnover rate	.24827
				Women 14-65 with children under 6: ratio of those with to those without husband present	.24869
35-44	% of personal income from nonwork sources	.21097	35-44	Index of relative rate of employment growth	.31784
	% unemployed, females	.27350		% unemployed, females	.37554
	Distance from growth center	.28979		% of personal income from nonwork sources	.39666
	Women 14-65 with children under 6: ratio of those with to those without husband present	.30671		Distance from growth center	.40235
	Labor turnover rate	.30739		Women 14-65 with children under 6: ratio of those with to those without husband present	.40883
	% nonwhite	.30748		% nonwhite	.41120
				Labor turnover rate	.41149
45-64	% of personal income from nonwork sources	.21355	45-64	Index of relative rate of employment growth	.40629
	Distance from growth center	.28878		Distance from growth center	.45867
	% nonwhite	.30902		% nonwhite	.46712
	Women 14-65 with children under 6: ratio of those with to those without husband present	.31359		Women 14-65 with children under 6: ratio of those with to those without husband present	.47754
	Labor turnover rate	.31700		% of personal income from nonwork sources	.48196
	% unemployed, females	.32133		Labor turnover rate	.48453
				% unemployed, females	.48532
65+	Distance from growth center	.08441	65+	Index of relative rate of employment growth	.16044
	% nonwhite	.13100		Distance from growth center	.18846
	% of personal income from nonwork sources	.14093		% nonwhite	.20367
	Labor turnover rate	.14381		Labor turnover rate	.20550
	% unemployed, females	.14432		% of personal income from nonwork sources	.20619
Standardized	% of personal income from nonwork sources	.26125	Standardized	Index of relative rate of employment growth	.45333
	% unemployed, females	.31551		% unemployed, females	.49883
	Distance from growth center	.34509		% of personal income from nonwork sources	.51792
	% nonwhite	.39455		Distance from growth center	.52898
	Women 14-65 with children under 6: ratio of those with to those without husband present	.38911		% nonwhite	.54537
	Labor turnover rate	.39270		Labor turnover rate	.54788
				Women 14-65 with children under 6: ratio of those with to those without husband present	.54836